Vol. 193 83rd Year No. 3534

THE GAS JOURNAL

FEBRUARY 11, 1931

A Glance at the Contents—

Gas Company Meetings.

Published to-day is the report of the Annual Meeting of the Gas Light and Coke Company, and of the Annual Meeting of the South Metropolitan Gas Company.

Institution of Gas Engineers.

Dr. Dent amplifies his reply to the discussions on the 26th and 27th Reports of the Joint Research Committee which were presented at the meeting of the Institution in November last.

The Education of the Gas Salesman.

This subject was discussed by Sir Francis Goodenough and Mr. Harold Whitehead at a recent meeting of the Southern District (London Area) Gas Salesmen's Circle, held at 28, Grosvenor Gardens, S.W., a report of which appears on a later page of this issue.

Continental Tour for British Workers.

Sir Francis Goodenough, C.B.E., Controller of Gas Sales to the Gas Light and Coke Company, will be one of the adjudicators in a prize essay competition whereby selected British workers will be given an opportunity of touring leading industrial centres in France, Belgium, and Germany.

Mr. D. H. Helps on Unfair Boosting.

In an outspoken address at the annual dinner of workmen in the Reading Gas Company, the Engineer and Manager of the Company, Mr. Douglas H. Helps, protested against the unfair boosting of electricity, and urged that it is time that the workmen in the gas-works throughout the country should wake up and take a hand in the protection of their employment.

Discussion on Incomplete Combustion.

We publish to-day the report of the discussion on Mr. E. W. B. Dunning's paper on "Incomplete Combustion: Its Importance, Recognition, and Prevention," read before the London and Southern District Junior Gas Association, which appeared in last week's "JOURNAL." Among those taking part in the discussion were Mr. J. W. Wood, B.Sc., of the University of Leeds, and Junior Vice-President of the Yorkshire Junior Gas Association; Mr. J. G. Clark, Manager of the Research and Training Section of the Gas Light and Coke Company at Watson House; and others who are conversant with Mr. Dunning's research work on the subject of combustion.

South Suburban Gas Company Report.

The report of the Directors of the South Suburban Gas Company to be presented at the Ordinary General Meeting of the Company on Feb. 13 shows that during the year the sales of gas have increased by slightly over 1 p.ct., and the number of consumers has been added to by 6981. The Directors recommend payment of a dividend at 6½ p.ct. per annum, leaving the sum of £2210 12s. 6d. to be carried forward to the next account.

Ammonia Liquor as a Fertilizer.

In our "Continental Notes" to-day is an abstract of information covering the preliminary results of an investigation, carried out by Dr. Bimschas, into the use of ammoniacal liquor as a fertilizer. The investigation was undertaken at the Mitscherlich Experimental Station at Marienburg, at the request of the Marienburg Gas-Works. The work was done in view of the present low revenue obtained by gas-works for sulphate of ammonia.

Commercial Gas Company Report.

The Directors' Report of the Commercial Gas Company for the past year, published to-day, indicates that the revenue account shows a profit for the year of £161,511 13s. 3d., which together with the balance of £35,488 8s. 5d. brought forward from the previous year, makes a total of £197,000 1s. 8d. After providing for the payment of the dividend for the June half-year, there remains a balance of £111,035 13s. 6d., out of which the Directors recommend the payment of a dividend for the December half-year at the rate of 6 p.ct. per annum, less income-tax.

The Future of the Gas Industry.

This is the title of a paper which Mr. Ronald B. Glover read at a joint meeting of the Eastern and Western Districts of the Scottish Junior Gas Association. The author emphasized the importance of control instruments in the manufacture of gas, and also dealt with distribution, service, and salesmanship. "There are still," he said, "many gas undertakings whose managers are not provided with the means of ascertaining with a fair degree of accuracy even the most elementary facts with regard to the operation of their plant. . . . It is suggested that, even in quite large gas-works, the data available to the operator are much less than those which are at the disposal of the electrical engineer, and that we cannot hope to get to that last penny of low cost per therm which is so necessary in competition with our rivals unless we are equally well equipped with the means of scientific control."

EDITORIAL NOTES

The Claims of the Fair

THE influence of the British Industries Fair increases from year to year, and no clearer proof of this is needed than the fact that, in spite of the depression of trade through which the world is passing, the space at Castle Bromwich was fully booked up earlier than has been the case in any previous year. This applies to the Gas Industries Section equally with other less well-defined Sections of the Fair, and the gas engineer visiting Birmingham between Feb. 16 and 27 will have a really interesting display to examine.

Once again the Gas Industries Section, in its prominent position in the centre of the Fair Buildings, with its special colour scheme and central organization, can serve as a model to other industries. It speaks well for the excellent spirit of co-operation which exists throughout the manufacturers in the Gas Section that every one of the exhibiting firms has agreed to fall in with the suggestions of the Organizing Committee in the matter of stand colouring and basis of stand design. Although in political circles the importance of the Gas Industry to the Nation has yet to be realized, it is noteworthy that the Fair Management Committee, with their real knowledge of industrial relationships, have not failed to grasp how essential town's gas is to industry in general. The delegates who are attending the three-day Joint Gas Conference will be the guests of the Fair Management Committee at luncheon on Wednesday, Feb. 25, while the Management have also extended an invitation to all members of the Junior Gas Associations and of the Salesmen's Circles to pay official visits to the Fair, when they will be similarly entertained.

The final arrangements for the Joint Gas Conference have now been completed. As stated in our editorial columns last week, Sir Arthur Duckham will preside, and will deliver his address at the opening meeting on the Tuesday morning. This meeting will be followed by an Official Gas Industry Luncheon, and the afternoon, as will be the case on the two other days, will be devoted to an inspection of the exhibits at the Fair. At Tuesday's official luncheon it is anticipated that the speakers will include Lord Eustace Percy, Sir Arthur Duckham, Sir Herbert Austin, and the President of the Institution of Gas Engineers (Mr. H. E. Copp). On the Wednesday (when Sir Arthur Duckham will be supported by Mr. H. E. Copp), Dr. C. H. Lander will give an address on "The Gas Industry and Its Relation to the Fuel Problems of Great Britain;" and when he takes the chair on the Thursday, Sir Arthur will be supported by Mr. John E. Daw, President of the British Commercial Gas Association. On that occasion there will be an address by Sir Francis Goodenough on "The Principles of Salesmanship." It is a gratification to learn from Mr. H. C. Smith, the Hon. Secretary to the Joint Conference, that applications for tickets have been coming in very well, and that there is every prospect of the Conference being the most successful yet held.

Engineers should carefully note that the Gas Conference this year is in the second week of the Fair. It is hoped that many seniors will find it a convenience for their juniors to visit the Fair during the first week, and report to them regarding any features of particular interest, and so save any loss of time during the comparatively brief visits which are all that circumstances permit to many engineers.

An Example of Co-Operation

A DETAILED description of the various exhibits will appear in the "JOURNAL" next week, but it will not be amiss to point out at this juncture one novel and important feature, which will prove of the utmost interest to gas engineers, as well as attractive to all gas users.

Several members of the Heavy Section of the Society of British Gas Industries have felt that, owing to the nature of their manufactures, it was extremely difficult for them to stage an interesting display at the Fair. They were, however, fully convinced of the great value of the Gas Section to every manufacturer in the industry, and did not wish to reap a harvest which others had sown. They felt that every manufacturer in the industry who did not support the Gas Industries Section was in effect profiting by the results of another man's advertisements, and in order to show their appreciation of the good work that the Section was doing for the industry they determined to finance the erection of some form of combined exhibit, which should be from first to last designed as a national advertisement for the whole Gas Industry. Certain members of the Heavy Section of the Society of British Gas Industries have therefore co-operated with the British Commercial Gas Association in the organization of such an exhibit, which will take the form of an Information Bureau staffed by expert salesmen, whose services have been generously given by various undertakings in the country. Theirs will be a dual duty —first, that of impressing upon interested inquirers the magnitude and public usefulness of our industry; and, secondly, that of answering in as complete a way as possible specific inquiries as to the use of gas.

We admire the public spirited manner in which the firms whose names are associated with the Information Bureau are supporting the real objects of the Gas Industries Section, without any hope of direct reward. So long as this spirit is abroad in our industry, we may continue to look for progress. Too many industries to-day are suffering from one section of those that draw their livelihood from them seeking personal profit without considering what effect their action will have upon their industry as a whole. The Gas Industry has always been the nursery of the true co-operative spirit, and we feel sure that this latest manifestation will bear good fruit.

Is All Well with Electricity?

THE extraordinary state of affairs existing in certain respects in the electrical world has been the subject of comment upon a number of occasions in the "JOURNAL," and, as our news pages show, it is now being more and more widely discussed throughout the country. The unfairness of the treatment that is being meted out to the gas industry is being made the subject of many protests, but none of them stronger or more dignified than those uttered on Wednesday by Dr. Charles Carpenter, as President of the South Metropolitan Gas Company, and again on Friday by Sir David Milne-Watson, the Governor of the Gas Light and Coke Company. Others must, and will, follow; the matter cannot be permitted to rest where it is. The gas industry would be unworthy of its great traditions were it tamely to submit to such injustice as that which forms the reason for these protests. All the gas industry is out to secure is fair play—that which should be universal, but is not. Fair play has, in fact, been described as a "jewel," perhaps because, though it should be an elemental principle, it is in reality often so difficult to secure.

As becomes his high position, which is that of a Minister of the Crown, we give, in the comments we feel compelled to make, first place to Mr. Herbert Morrison, who, as head of the Government Department of Transport, is, peculiarly enough, devoting so large a proportion of his energies to pushing electricity. Quite recently there have been a whole series of public appeals by him for a more rapid development of the electrical industry; and against the partisan character of these appeals, we at once entered our protest. It is the unfairness of advantage being taken by the Minister of his exceptional position to boost on each and every occasion, both in season and out of season, one industry to the consequent

detriment of another, that the gas industry will not brook. But, as we suggested a fortnight ago, looked at in another way, cannot all who are engaged in the gas industry take heart from this perpetual boosting of a competitor? Or, to put it in another way, is all well with electricity? May there not be here sound evidence of that "taking fright" on the part of the electrical industry which some people on the side of electricity so fondly imagine is the state of mind of the gas industry?

The justice of the gas industry's contention that a Minister of the Crown is taking an unfair advantage of his position in pushing electricity to the disadvantage of gas—an older and a no less worthy public servant—will be evident from a study of the statements made at the meetings of the two leading Gas Companies which are reported fully on later pages of this issue. The whole point of the complaint is also admirably set out by a writer in one of our electrical contemporaries this week, when he says: "The main thing is that electricity is having the time of its life from a propaganda point of view; the electric supply industry is being helped and fostered and prospered by Press and Government as it was never helped before." Our "Correspondence" columns this week contain, too, a trenchant indictment of Government action, while equally forcible are the remarks made by Mr. Douglas H. Helps, at the annual dinner of the Reading Gas Company's employees, a full report of which we give to-day.

On the other hand, the following extract from one of last Sunday's newspapers would, if the report be accurate, seem to show that electricity needs all the advantages of any kind which it can secure.

LIGHT FAILURE IN FOG.

> London was early to-day ringed with a continually shifting bank of fog and thick white mist. There was a general slowing-up of all road traffic in the suburbs.
>
> The darkness was intensified in Mile End and Stepney early this morning by the complete failure of the electric light supply. In the gloom and fog, with not even the street lamps burning, traffic was reduced to a standstill, and long lines of 'buses crowded with people returning home were queued up in a congested mass.
>
> The London Hospital in Whitechapel Road, and the London Jewish Hospital, Stepney, were among the institutions affected. In both cases the only illuminant available was candle light and electric hand torches, by means of which the nurses went about their duties.
>
> The cause of the failure was not discovered and remedied until nearly an hour afterwards.

Must Coercion be Resorted To?

BUT the above is only one half of the protest raised at the two Gas Company meetings referred to. When all is said and done, however greatly an inexcusable Ministerial attitude may rankle, it must be remembered that the disadvantage may not be a permanent one; for Mr. Morrison himself may be "here to-day, and gone to-morrow," so to speak. This consideration does not apply in the same way to the other point of the protest—namely, the high-handed attitude of many local authorities who have built houses with public funds. In a letter which appeared in the "JOURNAL" "Correspondence" pages last week, Col. S. S. Ogilvie (Joint Manager of the National Gas Council) told our readers that the whole of the great gas industry and its 113,000 employees "view with the gravest concern the increasing number of unfair restrictions which are being imposed on the use of gas in municipal houses. In nearly 100,000 houses in this country," he said, "the tenants are not allowed to choose the form of lighting or heating which they prefer. In no fewer than thirteen districts have local authorities prohibited the use of gas for any purpose whatsoever on their estates, and in forty-seven other cases specific uses of gas (*e.g.*, for lighting or for gas fires) are forbidden. These figures do not include the 26,000 houses upon which the London County Council has placed similar restrictions. In working-class houses in South London candles and oil-stoves may be found in use, simply because tenants are not allowed to have gas, and find that electricity is beyond their means."

Now although we may for a while longer be called upon to bear with Mr. Herbert Morrison's unusual understanding of his duties as a Government Minister, there must, in common justice, surely be some method of putting an end to the unbusinesslike plan adopted by so many local authorities for increasing the consumption of electricity, of which, of course, they are generally the suppliers. Following Col. Ogilvie's letter was one by Mr. William Higgs, of Basingstoke, in which he said: "Quite recently the Gas Company with which I have been associated for many years were informed by the Town Planning Officer of the Council that the Housing Committee had decided that electricity only would be allowed in the proposed new houses—and this notwithstanding that the Gas Company offered to lay mains, services, &c., free of cost to the Corporation." It is hard to define a limit to the extent to which some local authorities are prepared to go in this regard. Here is an instance quoted by the Governor of the Gas Light and Coke Company: "In a part of our own district, the local Council concerned, who are the landlords, went so far as to ensure that the gas pipes which had been installed in the houses should not be used for a gas supply for any purpose by taking the extreme step of filling these pipes with liquid cement." A quarter-of-a-century ago, when the possible disadvantages of municipal trading were discussed at great length in our pages, this sort of thing may have been envisaged. Well, we have it now; and what is going to be done about it?

Co-partners of the South Metropolitan Gas Company, without waiting for a considered reply to this question, took the matter into their own hands, and, having regard to the seriousness to them of any part of the Company's business being compulsorily shut down, decided first to form from among themselves a small Committee, and then to get into touch with London County Councillors and Members of Parliament representing districts in which the employees were interested, either as workers or as dwellers. Among others they wrote to the Minister of Transport. So far as the first part of this programme is concerned, it is an excellent example to follow; but possibly addressing the Minister of Transport indicates a spirit of undue optimism. A co-partner of the Gas Light and Coke Company, too, went to the Guildhall meeting that was addressed by Mr. Morrison, and protested as a gas worker against the injustice of Ministerial pushing of electricity. No opportunity must be lost of either individual or combined agitation against the persistent efforts that are now being made to help electricity to the detriment of one of the greatest boons that the community as a whole has ever enjoyed. The entire gas industry must resolve to fight on until that liberty of which many are being deprived is restored in every part of the country.

Gas Light and Coke Company's Record

IN addition to the disadvantages just enumerated, the gas industry in the first part of last year experienced exceptionally mild weather, and mild weather, with the enormous proportions that the heating load has now assumed, influences consumption to an important extent. There is also the effect of the prevailing industrial depression (with its bearing upon the private purse) to be taken into account. In the case of the Gas Light and Coke Company, the increase in business during the second half of the year was normal, but it was not sufficient to make up for the decrease in the sales of gas during the first part of the year. The soundness of the position is illustrated by the fact that during the year the Company had an addition of no fewer than 25,000 new consumers, while there were sent out 90,000 additional gas appliances, in the shape of fires, cookers, &c.

Look in which direction one will, there is no sign to be

seen of any falling off in the Company's activities. Work is progressing on the large installation of coke ovens at Beckton; a reconstructed retort house has been completed at Fulham, and another at Nine Elms; and at Brentford and Southall the work on vertical retorts and other plant is nearing completion. New showrooms have been opened at Barking Road, and others are in course of erection at Woodford, Harrow, Hackney, and Acton; while sites have been acquired at Billericay, Rayleigh, and Wickford for further showrooms. The Grays and Pinner Gas Companies were taken over at the beginning of last year, and the re-organization of these new districts is nearing completion. New gasholders have been erected at Southall and Richmond; and others are in course of erection at Beckton, Battersea, Kensal Green, and Harrow. The low-temperature plant at Richmond has been operated during the year, and arrangements have been come to with the Government Department concerned to carry on the work for another twelve months, though (in spite of the fact that the smokeless fuel produced has been generally considered satisfactory) the process has not so far proved a commercial success. In further pursuance of the policy of amalgamation, the Company have deposited a Bill to enable them to acquire the undertakings of the Southend-on-Sea and the Brentwood Gas Companies. In these various items there is abundant evidence of live administration and promise of ample reward in the future. The Governor (Sir David Milne-Watson) well summed up the position in this remark: "I consider our business sound to the core; and provided the dice are not loaded against us with regard to boosting electricity, and that the price of coal is not unduly increased by Government intervention, the prospects of the Company are excellent."

Meeting of the South Metropolitan Company

WHILE much that has been said applies with equal force to the affairs of the South Metropolitan Gas Company, there are, of course, individual points to be noted; and one of these is the remarkably low gas unaccounted-for figure—well under 1 p.ct. of the gas produced—in the South Metropolitan area. As in the case of the Gas Light and Coke Company, a decrease in the sales of gas was experienced during the early part of the year, consequent upon unfavourable temperature conditions, but, again, this decrease is now being made good.

Here, too, no effort is being spared by an experienced administration to ensure for the Company's operations the utmost possible measure of success. The remodelling of the gas-making plant at Rotherhithe was completed for the past winter's work, and is, upon the whole, justifying the expectations entertained with regard to it. The requirement for manual labour in running the plant has been reduced to a low point. With reference to the proposals discussed last summer, for close association between the Company and the Commercial Gas Company, now that these have been carried into effect the President of the South Metropolitan Company (Dr. Charles Carpenter) sees no reason to doubt that their usefulness will be realized by both the Companies concerned. Some of the advantages to be reasonably anticipated from such association were outlined by the President in these sentences: "We can pool our research. We can also pool our provision for encouraging improvement in the quality of the coal we purchase, and thus generally raise, not only our standard of working, but the quality of our bye-products. We can learn from each other and take counsel with each other, and I am pleased to say there are already more signs of progress arising out of this new habit than would have been furnished by many years of isolation under completely independent systems of control." At East Greenwich two low-temperature plants were installed; but one of these, after a period of some promise, broke down from mechanical weakness. The second plant (on another system) is gradually being put to work, but no working results are yet available, and the economics of the process cannot be stated.

Commercial Gas Company's Accounts

A STUDY of this Company's accounts for the past year reveals some very interesting figures. The Company is the smallest of the three Metropolitan Companies, and its area of supply, surrounded as it is on three sides by the Gas Light and Coke Company and on the South by the River Thames, is a very circumscribed one, and any increase in the sale of gas is very difficult to obtain. It is not surprising, therefore, that, with the climatic conditions of last year, and the general depression in trade, the Company has to record a decrease in the output. Notwithstanding this, however, the Directors are able to present accounts showing a substantial surplus on the year's working.

The following comparison of the principal items of expenditure with the figures of the previous year discloses a consistent decrease under all heads—viz.:

	1930. £		1929. £		Decrease. £
Coals and oil cost	285,457	against	302,156	..	—
Residuals realized	209,756	,,	206,226	..	—
Net coals and oil	75,701	,,	95,930	..	20,229
Wages carbonizing	35,494	,,	37,303	..	1,809
Purification	5,237	,,	6,869	..	1,632
Wear and tear	112,482	,,	132,538	..	20,056
Distribution	196,384	,,	207,296	..	10,912
Rent, rates, and taxes	34,082	,,	35,190	..	1,108
Other expenditure	111,660	,,	116,838	..	5,178
Total expenditure (*less* residuals)	571,040	,,	631,964	..	60,924

The gross profit is £161,512, against £141,058 for the year 1929. The dividend at 6 p.ct. per annum (the same rate as for the three previous years) and interest amounted to £148,163, against £150,976, the total improvement being £23,267. The deficit on the year's working in 1929 was £9918, leaving a net surplus for 1930 of £13,349.

The working results are also up to the usual high standard—viz.:

	1930.		1929.
Gas made per ton coal (therms)	73·20	..	73·09
Coke ,, ,, ,, ,, (cwt.)	10·95	..	10·70
Tar ,, ,, ,, ,, (galls.)	9·51	..	9·28
Liquor ,, ,, ,, ,, (,, 8 oz.)	40·87	..	39·25

and the costs per therm sold:

	1930. d.		1929. d.
Coals, oil, &c.	3·82	..	3·79
Residuals	2·81	..	2·59
Net coals, oil, &c.	1·01	..	1·20
Manufacture	2·24	..	2·41
Distribution	2·63	..	2·60
Rent, rates, and taxes	0·46	..	0·44
Management	0·69	..	0·67
Other expenditure	0·60	..	0·61
Total net expenditure	7·63	..	7·93
Gas, rentals, &c.	9·79	..	9·70
Balance being profit	2·16	..	1·77
Dividend and interest	1·98	..	1·89
	Surplus 0·18	..	Def. 0·12

The prices obtained for residuals are also satisfactory. Coke realized 22s. 5d. per ton, breeze 8s. per ton, and tar 2·79d. per gallon. Liquor showed the only reduction at 2s. 7d. per butt.

Combustion at the Appliance

AN excellent paper was presented at the last meeting of the London and Southern District Junior Gas Association by Mr. E. W. B. Dunning, of the Gas Light and Coke Company. It is concerned with incomplete combustion—a subject which is obviously of the utmost importance to the gas industry, but the facts concerning which are only now being looked squarely in the face. We have been too timid about the carbon monoxide question; recent investigations, including those carried out by the Institution of Gas Engineers and by the Gas Light and Coke Company, prove this. The products of complete combustion are harmless, and gas appliances can be designed to ensure complete com-

bustion. This is a question not of cost, but of the application of fundamental principles; and Mr. Dunning sets out these principles very clearly.

The essence of his contribution is proper combustion at the appliance. He points out that for any appliance there is a limit to the quantity of gas which can be burnt with complete combustion, and that this limit is affected by the design of the air inlet, the burner, the combustion space, and the flue-ways. Every gas appliance, when installed, should be adjusted to its rated gas consumption, which should be sufficiently below the safe limit to allow for variations in district pressure. Incidentally a corollary to this is that variations in district pressure should be kept within reasonable limits. We must therefore concentrate upon the design of the appliance and the application of principles of gaseous combustion, and regard a flue as an exit for the products of *complete* combustion. "Appliances should be capable of complete combustion without any additional fluepipe. . . . The mere provision of fluepipe, even if efficient, does not avoid the necessity for complete combustion."

There prevail in the minds of the public to-day many ill-conceived notions of the physiological effects of combustion products which are quite harmless—carbon dioxide being an outstanding example. And there exist also, in the minds of the semi-scientific, quite wrong ideas of what combustion is—a typical idea being that carbon monoxide in the products of incomplete combustion must arise from the content of carbon monoxide in the gas which is fed to the burner. There is, indeed, a very real need for technically-sound, clear propaganda work. As an industry we must appreciate the problem thoroughly, and then broadcast this appreciation; and in regard to the first phase Mr. Dunning's paper will prove a very real help.

It is not our purpose here to review what is undoubtedly a valuable contribution to our knowledge of the practical aspect of gaseous combustion, for we feel sure that the paper will be studied closely and with the interest which the importance of the subject merits; but we might with advantage call attention to two matters. The first is the desirability of arriving at some uniform method of expressing carbon monoxide concentration. America has an arbitrary method of her own, while in this country the results are expressed as parts of carbon monoxide per 10,000 parts of gas burnt, or as a ratio of carbon monoxide to carbon dioxide. The author maintains that a useful basis of comparison would be the volume of carbon monoxide formed per therm of gas burnt. We hope that after happy controversy a uniform method will be adopted. The other matter is the relatively extremely small amount of carbon monoxide at the flue outlet of properly designed gas appliances—in some cases the carbon monoxide concentration is lower than that found in the air of London streets. "We have found," says the author, "that the air entering a flueless radiator may contain more carbon monoxide than the flue gases leaving it, and then the concentration of carbon monoxide in the air is actually being reduced by the use of a flueless heater." This is of great interest, and it is significant that during the discussion on the paper Mr. J. G. Clark should characterize modern flueless heaters as appliances which are capable of serving the public well and are in accordance with the best standards of the gas industry.

Ammonia Liquor as a Fertilizer.

In our "Continental Notes" to-day is an abstract of information covering the preliminary results of an investigation, carried out by Dr. Bimschas, into the use of ammoniacal liquor as a fertilizer. The investigation was undertaken at the Mitscherlich Experimental Station at Marienburg, at the request of the Marienburg Gas-Works. The work was done in view of the present low revenue obtained by gas-works for sulphate of ammonia. It is the sort of work which the gas industry might ask the Rothamsted Experimental Station to carry out on some typical English food plants. Gas-works in agricultural districts might be able to secure a good outlet for their liquor if favourable reports from such an authoritative source could be quoted.

CORRESPONDENCE

Dr. Carpenter's Protest

SIR,—Not for the first time has Dr. Carpenter raised his voice in defence of the gas industry. His protest against the present policy of the Minister of Transport has come none too soon, for many of us have witnessed with growing resentment the flagrant propaganda in which the Minister has indulged from Glasgow to Guildhall. Surely it is outside the functions of a Minister of the State to engage, as he has been doing, in the boosting of the electrical industry which, in spite of his protests to the contrary, cannot but be to the detriment of gas interests.

From the correspondence which Dr. Carpenter quoted, it would appear that the Minister of Transport attaches a political motive to the attitude of the gas industry in this matter. This, however, is not so. It should not be forgotten that the Electricity (Supply) Act, 1926, was the work of the late Government. From the time the Bill was introduced until its passing into law there flowed from platform and Press obviously inspired speeches and articles as to the blessings which were to result from a "cheap and abundant supply of electricity."

The work took on a form which ignored altogether what the gas industry had done, was doing, and was still capable of doing for the country. On the part of politicians and Press there appeared to be nothing short of a conspiracy of silence regarding the gas industry.

Dr. Carpenter could have assured the Minister that this negative treatment was as oppressive in its way and as much resented by the gas industry as the positive propaganda of the present day.

(Incidentally the cash value of the advertisement received by the electrical industry must have been enormous.)

No doubt the municipalities have taken their lead from those who "sit in high places."

It is reasonable to suppose that the "activities" (blessed word) of municipalities are not going to lessen as the years go on. The logical outcome of the present position is that when a municipality undertakes the supply of milk, meat, or bread (perhaps not so remote as some may think) tenants of council houses will not be free to choose their milkmen, butchers, or bakers.

As regards gas lighting, one cannot go all the way with Dr. Carpenter in what he says about the use of gas for lighting. Many undertakings are putting up a desperate fight to retain the lighting load, and have not failed to impress on their consumers that gas affords a "pleasant warmth and soothing light."

F. A. GULLAND.

Maidstone, Feb. 6, 1931.

Municipal Tyranny

SIR,—It is with grave concern that I notice a serious increase in the restrictions imposed upon municipal tenants by the authorities, in spite of protests in the House of Commons some months ago.

At that time attention was drawn to the fact that nearly 100,000 householders in various parts of the country were not allowed to choose the kind of lighting, heating, and cooking which they preferred. Now it is London ratepayers on L.C.C. Housing Estates who have to submit to the ruling of a dictatorship; and, in some cases, tenants who object to the power provided are being threatened with eviction.

The London County Council is the most powerful landlord in the country, and that it should thus interfere with the rights of private citizens is a most serious menace to one of the basic principles of our liberties—viz., that an Englishman's home is his castle. Such an attitude is absolutely indefensible, for these building estates are being developed with the assistance of the taxpayer's money and for the benefit of the taxpayer.

May I urge that the authorities should once and for all put this matter right by insisting that tenants should be allowed absolute freedom of choice between gas and electricity for lighting, heating, and cooking in their homes.

C. HOWARD-BURY.

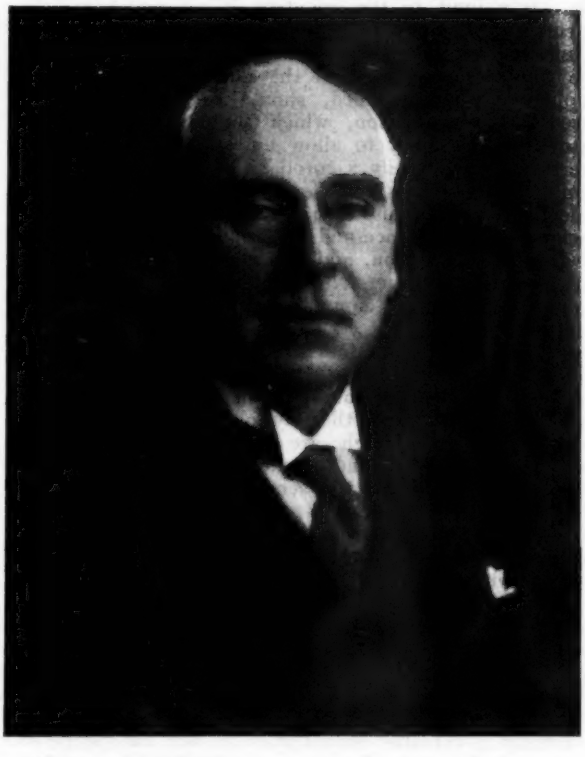
House of Commons, Feb. 3, 1931.

Retirement of Mr. W. B. Leech

On Dec. 19, 1930, a pleasant ceremony took place in the Engineers' Committee Room, Westminster, in the presence of all the Station Engineers and other Officers of the Company, when the Chief Engineer, on their behalf, presented to Mr. W. B. Leech a reflex stereoscopic camera, together with a mahogany viewing cabinet, to mark the occasion of his retirement. There was also a small present for Mrs. Leech.

The Chief Engineer referred to the nature of the work which Mr. Leech took up when he entered the Company in 1918, and pointed out that he took charge of the largest gas-works at a time when its resources had been severely depleted as a result of four years of war. He said that Mr. Leech quickly gained the respect and confidence, not only of his colleagues among the Officers, but of all employees of other grades who had come in contact with him; they all regretted that Mr. Leech's health had resulted in his having to retire at a time before his life's work had been properly achieved.

Mr. Leech, in replying, thanked all present for the sentiments and gifts that he had received, and he said that he would be very neglectful if he did not say how much he had appreciated the kindly way in which his brother officers had received him both when he first came to Beckton and throughout his career with the Company; he had received nothing but kindness, and they were always ready with help and sympathy. He had spent many happy years with the Gas Light and Coke Company, and while he regretted that he was leaving many years before he had expected to do so, yet the kindness of the Governor and Directors had made him happy in his retirement, except possibly for the fact that he was parting from so many good friends. [*From the "Co-Partners' Magazine" of the Gas Light and Coke Company.*]



PERSONAL

The Leeds Corporation Gas Committee have appointed Mr. THOMAS HAYES as a Senior Chemist.

Mr. HARRY V. BEEBEE, of Manchester, who has had 35 years' experience in the Tube Industry, has recently been appointed Agent to the Wellington Tube Works, Ltd., in the Lancashire Area.

Mr. THOMAS O'NEILL, who for 31 years has been Gas Manager at Dunbar, and is now retiring on account of ill-health, has been presented by the townspeople with a wallet of Treasury notes.

OBITUARY

The death occurred at a Nursing Home in London, on Feb. 4, after a short illness, of Mr. JOHN FREDERICK SIMMANCE, of Grosvenor House, Park Lane, and Westminster Palace Gardens. The funeral service took place on Saturday last at St. Stephen's Church, Rochester Row, S.W., and the interment at Westminster (Hanwell) Cemetery.

FORTHCOMING ENGAGEMENTS

Feb. 12.—SOCIETY OF BRITISH GAS INDUSTRIES.—Meeting of Council in the afternoon.

Feb. 18.—Visit of JOINT JUNIOR GAS ASSOCIATIONS to the British Industries Fair, Birmingham. Meeting in the Conference Hall at 11.30 a.m. and address by Mr. Harold E. Copp.

Feb. 20.—Joint visit of B.C.G.A. GAS SALESMEN'S CIRCLES to the British Industries Fair, Birmingham.

Feb. 20.—SOUTHERN ASSOCIATION OF GAS ENGINEERS AND MANAGERS (EASTERN DISTRICT).—Meeting at 2.30 p.m. at 28, Grosvenor Gardens, S.W. 1.

Feb. 21.—YORKSHIRE JUNIOR GAS ASSOCIATION.—Visit to Messrs. W. C. Holmes & Co., Huddersfield.

Feb. 21.—SCOTTISH JUNIOR GAS ASSOCIATION (WESTERN DISTRICT).—Visit to Uddingston Gas-Works.

Feb. 24-26.—JOINT GAS CONFERENCE at the British Industries Fair.

Feb. 27.—LONDON AND SOUTHERN DISTRICT JUNIOR GAS ASSOCIATION.—Paper and Films—"Holmes' & Holmes' Connersville Products."

Feb. 27.—GAS COMPANIES' PROTECTION ASSOCIATION.—Meeting of Committee, at 5, Victoria Street, S.W. 1, at 2.30 p.m.

Feb. 28.—WALES AND MONMOUTHSHIRE JUNIOR GAS ASSOCIATION.—Meeting at Cardiff. Paper by Mr. L. Cox (Cardiff), "Some Aspects of Gas Poisoning."

March 6.—MANCHESTER DISTRICT INSTITUTION OF GAS ENGINEERS.—Annual Meeting, Midland Hotel, Manchester, at 2.30.

March 7.—WESTERN JUNIOR GAS ASSOCIATION.—Meeting at Bristol.

March 10.—NATIONAL GAS COUNCIL.—Meeting of Central Executive Board, 28, Grosvenor Gardens, S.W. 1.

March 19.—SOUTHERN ASSOCIATION OF GAS ENGINEERS AND MANAGERS.—Annual General Meeting at the Hotel Metropole, Northumberland Avenue, W.C., at 2.15 p.m.

April 10.—NORTH BRITISH ASSOCIATION OF GAS MANAGERS.—Spring meeting at Falkirk.

May 22.—SOCIETY OF BRITISH GAS INDUSTRIES.—Annual General Meeting in London, under the Presidency of the Right Hon. Lord Eustace Percy, M.P.

June 2-4.—INSTITUTION OF GAS ENGINEERS.—London Conference.

Oct. 27-28.—INSTITUTION OF GAS ENGINEERS.—Autumnal Research Meeting.

THE NEWS OF THE WEEK

The Bradford Gas Department have an attractive stand at the Better Homes Exhibition now being held at the Manningham Lane Rink, Bradford. Demonstrations of cookery, washing, &c., with the help of gas are being given daily to large audiences.

In the "Dewsbury Reporter" for Feb. 7 was the following comment: "We congratulate the Dewsbury Gas Department on the excellent light which the two gas lamps which have been substituted for the electric light on the island site in front of the Dewsbury Town Hall are giving; it is a great improvement."

Manchester District Institution.—The 61st Annual Meeting of the Manchester District Institution of Gas Engineers will be held at the Midland Hotel, Manchester, on Friday, March 6, at 2.30 p.m. Mr. W. J. Smith, B.Sc., Bolton, will induct the President-Elect, Col. W. M. Carr, of Stretford, into the Presidential Chair.

The Bristol Meter Examiner reports that during the past quarter he has inspected 2270 gas meters, of which 1732 were correct and 538 incorrect. Of the incorrect gas meters 90 registered in favour of the seller and 221 were in favour of the consumer, while 223 meters passed gas without registration, and four would not work at all.

The Mines Department have issued a Preliminary Statement of the number of deaths caused by accidents in and about mines and quarries of Great Britain during the year 1930. This statement is on sale price 1d. net, by post 1½d., and may be obtained through any bookseller or direct from H.M. Stationery Office, Adastral House, Kingsway, W.C. 2.

Special Terms for Water Heaters are under consideration by the Market Harborough Gas Committee, who recommend that a special charge of 7d. per therm (less 20 p.ct. for prompt payment) be fixed for all gas used in the "Sunhot" and "Equator" storage type water heaters, and that the Gas Department offers the water heaters to consumers upon terms of hire purchase.

The Recently-Formed Ex-Servicemen's Association of the Belfast Corporation Gas Department held their first annual social on Friday, Feb. 6, Mr. J. D. Smith, the President, in the chair. There was a good attendance of members, all of whom wore their war medals. After tea there was an enjoyable smoking concert. Several toasts were suitably honoured, among the speakers being Mr. J. D. Smith and Councillor H. M'Laurin, J.P. (Chairman of the Gas Committee).

A Benzole Recovery Plant is to be installed by the Plymouth Corporation Gas Committee, in accordance with proposals submitted by the Gas Engineer, who also reported as to the arrangement made for supplying the Corporation Transport Department with the benzole produced. The Committee decided to seek sanction to borrow £10,000 for providing a benzole recovery plant and also instructed the Engineer to prepare plans and estimates with a view to tenders being invited for the plant.

The London County Council have authorized an agreement with the Gas Light and Coke Company for the supply of gas to the Hanwell Mental Hospital at the rate operating generally in the district in which the hospital is situated, less, in respect of the consumption of gas up to 4 million c.ft. per annum, a discount of 10 p.ct., and, in respect of the consumption beyond that quantity, a discount of 15 p.ct.; also the laying at a charge of £280 of a 6-in. service main to connect the Company's main with the Hospital main.

A Reduction in the Price of Gas has been announced at Newcastle-under-Lyme from 3s. to 2s. 9d. per 1000 c.ft. In announcing this reduction the Deputy Mayor, at a recent Council Meeting, said that they could reduce the price of gas still further, but they did not wish to undercut their neighbours, and wanted to live comfortably by their side. He stated, however, that in the near future the price of gas in Newcastle-under-Lyme would probably be reduced considerably. This decision follows upon a recent offer by the Stoke-on-Trent City Council to supply gas in bulk to Newcastle at 1s. 6d. per 1000 c.ft.

No Dictatorship in Lighting and Heating.

All three political parties are energetically preparing for the L.C.C. elections on March 5, the largest municipal election in the world. This year the London Municipal Society, the champions of the Municipal Reform, intend to contest every seat, and Mr. W. G. Towler, the Secretary, in an interview, mentioned some of the principal campaigning points of his party.

"Economy with efficiency is to be our watchword," said Mr. Towler, "and our candidates intend to press for the exclusive use of goods made by British, and preferably London labour, in all work undertaken by the L.C.C."

One problem of special interest to residents on the County Council estates, which Mr. Towler discussed, was the question of lighting and heating of houses. He stated that one of the platform planks of South London candidates in his party would be that tenants should have a freedom of choice as to the use of gas or electricity in their houses. Mr. Towler referred to the case of an estate outside the County area where he had personally been able to make a successful protest against unfair restrictions on the use of gas.

"The L.C.C.," he said, "have appointed a Special Committee to inquire into the problem, and it will be one of our aims to see that anything in the form of dictatorship in the matter of the lighting and heating of municipal houses is strongly resisted."

Why Liberty is Essential.

The following extract from the Newcastle "Evening Chronicle" sheds a wealth of light upon the question of the "New Dictatorship," against which the gas industry is now so earnestly protesting:

As bearing upon the high cost of electricity for domestic purposes in Newcastle, Alderman James Smith, Chairman of the Newcastle Housing Committee, has revealed a fact not generally known.

A considerable number of dwellings erected under the City Council's housing schemes are not equipped with electric lighting. Alderman Smith explained that members of the Committee had protested against the recommendation that electricity be not installed on the ground that it was a retrograde step. They were, however, convinced by the evidence adduced that tenants of the cheaper dwellings were unable to afford the extra cost of electric lighting as compared with that of gas.

"I may say," added the Alderman, in agreement with Mr. Roberts, the City's Housing Architect, "that we have received many applications from tenants of Council houses, in which electricity was installed, for permission to have gas lighting substituted. "Albeit reluctantly, we have granted permission for the substitution, since there can be no doubt that, on current tariffs, gas lighting is materially cheaper."

They had evidence, he added, in the smaller number of instances in which electricity had been substituted for gas, that the people who could afford electricity preferred it.

It was to be anticipated, however, that consideration of the circumstances of prospective tenants would demand that gas lighting be installed in a considerable number of the dwellings to be erected under the big re-housing scheme on cleared sites in the older parts of the city.

Mr. Douglas H. Helps on Unfair Boosting of Electricity.

A strong call to the gas industry and all connected with it to "sit up and take notice" was made by Mr. Douglas H. Helps, the Engineer and Manager, when presiding at the annual dinner of the workmen of the Reading Gas Company.

After the loyal toast had been honoured, Mr. L. A. Rumble, in proposing the toast of the Chairman and Directors of the Reading Gas Company, said that it had been his pleasure and privilege to propose that toast on previous

THE NEWS—continued.

occasions. Since he came to Reading 25 years ago, the business of the Company had made great strides. In 1905 the make of gas was 530 million c.ft., whereas last year it was 1410 millions, an increase of 166 p.ct. This continued progress made it necessary to have a business-like body of Directors, which, undoubtedly, the Reading Gas Company possessed.

Mr. D. H. Helps, in reply, said that on behalf of the Directors, he wished to thank Mr. Rumble for what he had said in proposing this toast and for the manner in which it had been received. He had experience with several Boards of Directors, and where the interests of employees were concerned, he had never known a more sympathetic Board than the one he was now serving, and the result was what it was. They were selling gas at a price which compared most favourably with most towns in the country, and when new capital was required they were able to raise it, if not on such favourable terms as before the war, yet they could do so on terms which compared favourably with similar requirements elsewhere.

Boosting of Electricity.

"Now while I fully recognize that this is not an occasion for talking very seriously," continued Mr. Helps, "there is a matter which is of such great importance to all of you that I must ask you to pardon me for doing so. I refer to the most unfair boosting of the electrical industry by the Government, and particularly to what Mr. Morrison, the Minister of Transport, is doing. Indeed 'old times have changed, new manners come,' and if times have improved, which is doubtful, manners certainly have not, for here we have a Minister of the Crown going about the country performing what one speaker has described as 'duties approximating to those of a commercial traveller to stimulate the activities of electricity undertakings, a State-aided industry which employs little labour and uses materials, practically the whole of which are of foreign manufacture or origin—with the exception of coal—thereby British capital is spent abroad when it would otherwise be available to provide employment in this country.'

"It is time that the workmen in the gas-works throughout the country—and not only men in the gas-works, but the great army of men engaged in the production by contractors of gas plant—should wake up and take a hand in the protection of their employment. I was very glad to see that one of them, a gas-worker from Shoreditch, did so, when he attended a meeting of Electricity Supply Authorities at the Guildhall and complained of the unfair propaganda of the Minister of Transport. On Wednesday last the Electrical Contractors' Association held their dinner at the Savoy Hotel in London; the Minister of Transport was, of course, there with his boosting plant, and the Chairman in thanking him for his speech made this remarkable statement:

> 'That they had to change the deep-rooted habits of the people.'

In other words, give up the use of gas and use electricity. Deep-rooted indeed these habits are, in the rich soil of experience of an industry which, to quote from the report of the South Metropolitan Gas Company issued on Wednesday last, 'has for more than a century fulfilled, and is fulfilling a great purpose in the economical utilization of the country's coal resources which in London alone gives employment to some 30,000 persons, excluding those employed in ancillary undertakings, and which continued to function unaided when electric power stations had to be manned by naval ratings during the general strike. Such an industry surely deserves better recognition from the Government responsible for the health and welfare of the country.'

The Best Reply.

"The best reply to the gentleman who is interested in the sale of electrical apparatus—much of it no doubt coming from Germany—is to quote from a speech by Mr. Arthur Hayday, M.P., Vice-President of the National Union of General Workers, who after enumerating the boons and blessings which gas had brought at very small cost to the people said: 'Are all these to be forgotten or overlooked, and are the hundred and twenty thousand workers engaged in the gas industry and the many thousands employed in ancillary trades to be thrown on the scrap-heap in order that the same services shall be rendered by electricity—at greater cost, with a huge waste of coal and chemicals, and with a smaller amount of labour employed? To ask the question is to answer it—but the trouble is that no one outside the gas industry seems to know the facts or, if they do, to think seriously about them and their inferences.'

"Now, I have many friends in the electrical industry and am loth to make invidious comparisons between gas and electricity, but in view of the unfair attitude of the Government, one is tempted to point out many reasons why the Gas Industry is of greater value to the nation than that of our rivals. When we take a ton of coal we return to the public some 80 p.ct. of the original heat of that coal as compared with a maximum of 20 p.ct. in the case of our rivals. The Government and many who do not understand the subject think that an increase in the use of electricity will reduce unemployment.

"To spoon feed one industry which *was* in healthy competition with another will not reduce, but increase unemployment. Such procedure is not only unwise but dishonest. I do not know of anything which can prevent—nor do I want to know of anything which can prevent—a healthy progress in the electrical industry. On the other hand there is nothing that can stop the development of the Gas Industry unless its progress is retarded by State aid and such unfair propaganda as is being carried on by the Minister of Transport."

Report of the Directors of the Commercial Gas Company.

The following is the Report of the Directors of the Commercial Gas Company to be presented at the General Meeting on Feb. 12:

The Directors submit the accounts for the year ended Dec. 31, 1930. The revenue account shows a profit for the year of £161,511 13s. 3d., which together with the balance of £35,488 8s. 5d. brought forward from the previous year, makes a total of £197,000 1s. 8d. After providing for the payment of the dividend for the June half-year at the rate of 6 p.ct. per annum, less income-tax, on the ordinary stock and for the debenture and other interest, there remains a balance of £111,035 13s. 6d., out of which the Directors recommend the payment of a dividend for the December half-year at the rate of 6 p.ct. per annum, less income-tax, which, with the dividend paid for the first half-year, permits the allocation of the sum of £20,732 16s. to the employee co-partners.

The Directors have pleasure in announcing that the working agreement with the South Metropolitan Gas Company, which was submitted to and approved by the proprietors at the special meeting held on July 30, 1930, received the formal approval of the Board of Trade on Sept. 28. In accordance with the conditions of the agreement, proprietors were invited to exchange their holdings of stock, or any part thereof, up to a total of one-third of the ordinary capital of the Company for 6 p.ct. preference stock in the South Metropolitan Gas Company, in the proportion of £100 Commercial stock for £92 South Metropolitan stock. Applications exceeded the amount to be exchanged and the agreement is now in force.

Under the provisions of the agreement, three Directors, Mr. William Graham Bradshaw, C.B.E., Mr. Henry Willingham Gell, O.B.E., and Lord Marshall, P.C., K.C.V.O., elected to vacate their office as at the end of November last, and, in conformity with the Acts of Parliament regulating the Company, the vacancies thus created have been filled by the appointment of Messrs. Frank Harding Jones, M.Inst.C.E., Benjamin Robert Green, and Frederick McLeod, J.P.

Messrs. Arthur Matthews Paddon, M.Inst.C.E., and Benjamin Robert Green, two of the Directors, retire by rotation, and, being eligible, offer themselves for re-election. Mr. S. W. Savage, one of the Auditors, will go out of office by rotation, and, being eligible, offers himself for re-election.

Charles Carpenter,
Chairman.

Report of the Directors of the South Suburban Gas Company.

The following is the Report of the Directors of the South Suburban Gas Company to be presented at the Ordinary General Meeting of the Company on Feb. 13.

During the year the sales of gas have increased by slightly over 1 p.ct., and the number of consumers has been added to by 6981. The demand for gas appliances has been well maintained. After providing for debenture and other interest charges, and the payment for the first half of the year of a dividend at the rate of 6½ p.ct. per annum, less income-tax, there remains a balance of £52,383 19s. 3d., out of which the Directors recommend payment for the second half of the year of a dividend at the same rate per annum, leaving the sum of £2210 12s. 6d. to be carried forward to the next account.

Tenders were invited in November last for £300,000 of

5 p.ct. perpetual preference stock and £200,000 of 5 p.ct. perpetual debenture stock, the allotments being at average prices of £95 10s. 5d. and £100 3s. 4d. respectively.

The Directors retiring by rotation are Dr. Charles Carpenter and Mr. Frank H. Jones, who, being eligible, offer themselves for re-election. Mr. Alexander Ross has been re-elected an Employees' Director. Mr. Ernest D. Davey, Auditor, retires by rotation, and, being eligible, offers himself for re-election.

CHARLES CARPENTER,
Chairman.

Continental Tour for British Workers.

Sir Francis Goodenough's Co-operation.

Sir Francis Goodenough, C.B.E., Controller of Gas Sales to the Gas Light and Coke Company, will be one of the adjudicators in a prize essay competition whereby selected British workers will be given an opportunity of touring industrial centres in France, Belgium, and Germany.

Five prominent firms, including the Gas Light and Coke Company, are associated with the organizers, the Economic League, in the promotion of this scheme. The aim of the scheme, which is restricted to bona-fide male workers in full employment and not less than 21 years of age, is to give workers a chance to study industrial conditions on the Continent at first hand.

Workers are invited to write an essay on "How to Restore Britain's Industrial Prosperity." Successful competitors (about twenty-five in number, it is hoped) will make the tour under competent guidance. Full hospitality and free transportation will be provided throughout the ten days' travel, and the workers will be compensated at their normal rate of wages for time lost during their period of absence.

Before leaving England the party will be given an opportunity of inspecting the establishment of the associated firms, including the London plant of the Gas Light and Coke Company. Sir Ernest Benn and Mr. Archibald Crawford, K.C. (Director of the Economic League), will assist Sir Francis Goodenough in judging the essays. The other firms are Messrs. Benn Bros., Ltd., Hovis, Ltd., Crosse & Blackwell, Ltd., and the Auto-Strop Safety Razor Company, Ltd.

"The Harnessed Flame."

The Record of Progress of the Gas Light and Coke Company sent out a year ago met with so friendly a reception that the Governor and Directors of the Company have felt encouraged to publish a further record, under title of "The Harnessed Flame," which should prove at least of equal interest.

The cover of the booklet is in itself striking and almost compels one to look within, where there is a wealth of interesting information embracing the scope and activities of this great London enterprise. The booklet is designed to arouse the consumer's personal interest in a great industry formed to meet his needs, and is an admirable work, illustrated by excellent photographs of the Company's works and plant, showing what can be produced from coal, and its value in gas and bye-products compared with electricity. A series of drawings illustrative of the progress of coal from the pit to the consumer as gas is very effective.

The booklet shows how the ingenuity of men, working in intricate collaboration, is placing all the resources of Nature at their disposal. The flame, an object of fear, desire, and awe, since first Prometheus stole it from the gods, the flame which is the symbol of life, has been harnessed to the service of humanity. Appallingly dangerous when at large, devastating whole countries in the form of forest fire, it has been tamed and disciplined; and now it performs its allotted task so regularly, so safely, that we forget it was not always obedient to our commands.

"Gas or Electricity" used to be the cry; but this booklet now urges that it should be "Gas and Electricity." These two public utilities are complementary, and side by side they can grow, if each is used where it is most efficient and economical. A brief history of the progress of gas is given, and one is given an insight to some of the inner working of this great Company's machinery. Photographs show the new retort house and handling plant at Brentford, the coal-handling plant and main hoppers at Beckton, the new gas washing and purifying plant at Bow Common, coke loading at Fulham, the waterless gasholder at Staines, and other interesting pieces of plant and equipment.

Altogether the booklet forms a very valuable piece of propaganda containing as it does many interesting facts about a great industry and the progress made by one of its greatest companies.

THE NEWS—continued.

Beckton "Rangers" at Dinner.

Beckton "Rangers" mustered at full strength on Jan. 31 for the annual dinner of "C" and "D" Companies of the 12th Battalion London Regiment. The "A," "D," and "C" Companies of the "Rangers" are entirely recruited from Nine Elms, Beckton, and the Products Works respectively.

This was held at the Products Works, Beckton, under the Chairmanship of Capt. F. M. Potter, M.B.E. (O.C. of "C" Company), and among those supporting him were Brigadier-General Lord Gort, V.C.; Col. Sir David Milne-Watson, LL.D., D.L. (Governor of the Gas Light and Coke Company); Lt.-Col. Guy Portman; Mr. Thomas Hardie (Chief Engineer); Mr. W. G. Adam; and Capt. R. W. Hunter.

Honour having been paid to the Loyal Toast and that of "Fallen Comrades," Capt. Potter proposed "The Honorary Colonel." He stated that Sir David Milne-Watson was a great man from whatever point of view they might measure greatness, and he had the loyalty of all who served under him, either as Hon. Colonel of that Regiment or Governor of the Gas Light and Coke Company. In spite of artificial feeding of its competitor, he had kept the Gas Industry as a whole, and that Company in particular, in such a state of efficiency that it still held its own. Referring to the achievements of the "Rangers" during the past year, Capt. Potter said there was one joint effort of which the Beckton Companies were very proud, and that was the winning of the Divisional Transport Cup. For the second time "C" Company won the divisional field firing competition, and they also gained the Hunter Cup for tactics. The Calvert Challenge Cup for general efficiency went to "D" Company. Such was the standard in the Battalion at the present time that the winning of a cup meant real hard work. "C" and "D" Companies had won a good many cups, and they had won a prize which could not be valued in silver, and that was the real Company spirit. Despite the unfortunate weather that was experienced, they all enjoyed the type of command which they had in 1930, under Lord Gort, for it had led to a spirit of comradeship and discipline which would serve to make them better co-partners and better and healthier citizens.

In responding, Sir David Milne-Watson said he was delighted that "C" and "D" Companies had done so well during the past year. He was sorry that he was unable to join them in camp, for he had always in other years enjoyed spending a day with them. It was always a great pleasure to him to meet the men and to feel that they were one in that great movement—the Territorial Army. There were a great many people who said that they did not believe in fighting. None of them was anxious to be aggressive, but, at the same time, they had to be prepared to defend their hearths and homes, and that was why they were in the Territorial Army. Nobody could challenge that as being the first duty of any citizen. Sir David stated that no position he held gave him greater pleasure and also a greater sense of responsibility than that of being their Hon. Colonel. He was proud to be Hon. Colonel of such an efficient regiment.

Brighter Homes Exhibition at Birmingham.

The Birmingham Corporation Gas Department are showing at the Brighter Homes Exhibition which was opened last week at Bingley Hall, Birmingham, a very practical collection of appliances, all of which demonstrate the labour-saving advantages of the use of gas in every home.

Of the newest appliances, there is nothing more striking than the thermal storage water heater, which is designed to supply all the hot water taps in the house with hot water. This apparatus is fitted with a thermostat which controls the gas consumption and so reduces the cost to a minimum when water is not being drawn.

For the kitchen, porcelain enamelled cooking stoves are displayed in new and artistic colouring. These are becoming particularly popular, where discriminating housewives wish to carry through the furnishing of the "woman's workshop" in a bright and harmonizing scheme.

Fireplaces fitted with gas fires to meet every style of decoration are shown fixed in suitable surrounds, the latest design being a concave setting to fit the well-known "Devon" grate.

Radiators for the hall appear to be still as popular as ever. "If you heat the hall of the house, you heat the whole of the house" is a familiar truism. The garage radiator which is recommended by Insurance Companies, although not so well-known, is rapidly becoming popular.

Ornamental fittings for lighting are shown, and particular attention should be drawn to the new long-distance switch by which a gas light can be turned up on the landing from

THE NEWS—*continued.*

the hall. These can be fixed to existing lighting fittings, very little alteration or addition being required.

What will be of interest to all who have the furnishing of their home in mind is the gas-operated refrigerator. This is the simplest form of refrigeration, as there are no mechanical parts to need expert attention, the only requirements being a small gas and water supply.

Midland Association.

On Monday night, at the Grand Hotel, Birmingham, the Midland Association of Gas Engineers and Managers held their Annual Dinner. It was a most enjoyable function, and the fixture is likely to stand in the Association's programme, for over 130 were there on this occasion. They were welcomed by the President, Mr. Alfred Bird, Engineer, Manager, and Secretary of the Bromsgrove Gas Light and Coke Company, and Mrs. Bird, who carried a bouquet of pink tulips presented to her by the Committee. Mr. Harold Copp, President of the Institution of Gas Engineers, and Mrs. Copp were guests of the Association.

During dinner there was music by the Dale Forty Symphonics, and, later, Miss Amy Pearman, a niece of Mr. Bird, sang some charming songs. Dancing followed, and continued till midnight, Mr. Robert Meiklejohn discharging the duties of M.C. with conspicuous success.

The one toast of the evening, that of the President, was in the hands of Mr. Copp, who claimed that the Midlands District, whence came such names as Murdoch, Hunt, and Hack, is and always will be celebrated in gas traditions. In referring to the continuous activities of the Institution of Gas Engineers, Mr. Copp made special mention of the new Committee which has been set up to consider the very difficult problem of salaries. What the Committee want is practical suggestions, and co-operation between the Parent and the District Associations will be essential. As for the competition, or rather what might be called the attempt at annihilation, which the Gas Industry is experiencing, Mr. Copp has no doubt that the difficulties will be overcome; and in this respect he looks upon cultivation of the industrial load as a matter of prime importance. Another step which is claiming consideration is the establishment of a laboratory for the testing of gas appliances. He himself suggested such a step as long ago as 1905 in a paper before the Midland Association; but the idea did not then take root. Now, however, there is again definite tendency towards establishing such a Central Bureau.

Stoke's Bill to be Fought Again.

Another costly Parliamentary fight in connection with Stoke-on-Trent's second attempt to annex Newcastle-under-Lyme and the urban district of Wolstanton is now inevitable.

The Newcastle Town Council unanimously decided at a special meeting to-night to oppose Stoke's Bill, which has been deposited with the House of Lords, who previously rejected it, and instructed the Town Clerk to take all the necessary steps.

Both Newcastle and Wolstanton recently declined Stoke's offer to submit the proposals of the Bill to arbitration of the Ministry of Health, with a binding award.

Some Features of Carbonization in Glover-West Verticals.

A new brochure dealing with this subject has recently been published by West's Gas Improvement Company, Ltd., of Miles Platting, in which is set forth in very readable form, accompanied by a number of excellent photographs and diagrams, some of the special features of the Glover-West system of continuous carbonization in vertical retorts.

The continued success of the Glover-West system of continuous carbonization in vertical retorts, it is stated, is conclusively demonstrated by the fact that there are at present some 300 such installations in operation, carbonizing all varieties of gasmaking coals in this country and abroad. The chief points which distinguish the Glover-West system are: (*a*) The particular method of heating the retort; (*b*) the elliptical shape and the capacity of the individual retort; (*c*) the special features in the design, by which the heat of the residual coke inside the retort is utilized for raising the temperature of the steam at the base of the retort to such an extent that the practice of steaming does not materially affect the throughput of the retort.

Reference is made to the firm's "New Model" retort, which has been designed to take full advantage of the practice of steaming the charge. It consists of the original standard retort superimposed upon a chamber specially designed to present an enlarged area of incandescent coke to the incoming steam at the base of the retort, so that the steam is superheated to a temperature approaching the point of dissociation before it actually enters the retort proper. By this means the whole of the available heat from the combustion chambers is utilized solely for the purpose of carbonizing the charge of coal, while the sensible heat of the newly formed water-gas is available for the purpose of internally heating the core of coal in the retort.

Various other important details are dealt with in turn, including the coke extractor, heat conservation, the setting, the producer, coal valve, mouthpiece and division plate, gas offtake valve, steam valve, waste heat recovery, conveyors, handling plant, and so on, all items being described and illustrated; while finally a list is given of the Glover-West installations in operation or under construction at the end of December, 1930, showing the number of retorts and the nominal capacity per day. The total nominal capacity of installations throughout the world is claimed to be of the order of 467,351,000 c.ft. per day.

50 Net-Ton Miles for 5d.

A recent issue of "Motor Transport" contains an account of tests carried out on the use of producer gas for motor transport. The actual plant referred to is the invention of Mr. Norman Clarke Jones, Rose Cottage, 25, Fairfield Road, Charlton, London, S.E. 7, and has been installed on a standard seven-year-old Ford 1-ton vehicle. It is of exceptionally simple construction, and the cost of a 20-H.P. plant, such as that fitted to the Ford 1-tonner will, it is understood, be in the region of £25. The fuel used is coke.

The following particulars of a run have been supplied:

		Tons.	Cwt.	Qr.	Lb.
Weather	Cold, showers				
Truck	Ford 1-ton old T model				
Fuel	Suncole low-temperature coke				
Load	Weight of truck, load, passenger, and plant	2	0	0	4
	Weight of plant	0	2	0	23
		1	17	3	9
	Weight of truck	0	19	2	0
	Weight of load	0	18	1	9

Distance covered	62·0 miles
Time taken	2 hours 59 mins
Time required for starting up	19 mins.
Fuel used	39 lbs.
Water used	2260 c.c., or 0·497 gall.
Average speed	20·7 miles per hour
Fuel used per mile	0·627 lb.
Water used per mile	36½ c.c., or 0·008 gall.
Ash and clinker	5 lbs.

Using the fuel consumption figure obtained on that occasion as a basis, the following comparative table of estimated road transport running costs shows the remarkable operating economy claimed for the new plant:

	s.	d.
1-Ton Ford Truck (T Model)—		
Petrol: 14 miles per gall. Price, 11d. per gall. 100 miles requires 7 galls., costing	6	5
Coke (smalls): 0·627 lb. per mile. 100 miles require 63 lbs.—		
At 1s. 6d. per cwt.	0	10
At 2s. per cwt.	1	2
At 3s. per cwt.	1	8
		d.
5-Ton Truck—		
Petrol: 5·5 m.p.g. at 11d. per gall. Cost per mile		2·0
Coke (smalls): 2·3 lbs. at 0·16d. per lb. (30s. per ton). Cost per mile		0·37
Steam wagon: 5 lbs. steam coal at 0·24d. per lb. (45s. per ton). Cost per mile		1·2
		d.
30 H.P. Engine. Fuel costs per B.H.P. hour—		
Petrol (commercial in bulk). 0·64 lb. per B.H.P. at 10½d. per gall. (1·4d. per lb.)		0·896
Coke (smalls): 1·1 lb. per B.H.P. at 0·16d. per lb. (30s. per ton)		0·176
Heavy-oil engine: 0·42 lb. per B.H.P. at 0·55d. per lb. (5d. per gall.)		0·23

Improvement of Bradford's Street Lighting.

The improvement of Bradford's street lighting is to be undertaken by the Gas Committee at a cost estimated to be of the order of £12,000. This will include the gas lighting of the principal secondary roads of the City—following up a recommendation of a special investigation committee in favour of gas on all except tramway routes, as being cheaper than and as efficient as electricity.

The improvement will involve the reducing of the distance between lamps and increasing the height of the

standards to 18 ft., as already in use in Canterbury Avenue (the *venue* of a recent lengthy comparative test) and in part of Bingley Road, Heaton. The proposal will increase the number of lamps on such secondary roads from the present 1111 to 1592. They will be clock-controlled, and higher power units will be fitted where necessary, as well as refractor glasses for deflecting light rays to better purpose. It is proposed also to supply gas for street lighting at the lowest price now charged to private consumers, and it is estimated that this will result in a saving in the City's lighting bill of £6900 per annum. The £12,000, if the scheme is approved, will be taken out of the Gas Department's reserve fund. The special investigation committee have approved the proposal.

The Electricity Committee, it is understood, are not going to take their defeat on the street lighting test without another struggle, and are to ask the City Council for further consideration of the whole matter. The total estimated cost of street lighting in Bradford for the current year is £100,160.

Gas Cooking Equipment in Wellington Hotel.

The equipment of the kitchen at the Hotel St. George is an innovation in New Zealand, states a New Zealand paper, for it ranks as the finest and first of its kind in the Dominion. The Wellington Gas Company have demonstrated how a modern hotel kitchen should be equipped. The big central gas range comprises six gas-heated roasting and baking ovens, and the hotplate is fitted with twelve powerful burners. This is the main range. Then there is a "Friar" fish and potato range for frying purposes, a twelve-space rapid grill for chops, steaks, &c., and a two-deck superheated gas oven for baking pastries, cakes, and delicacies. This is a new feature in Wellington, and it retains the heat for a long period after the gas has been turned out.

There is a steam-heated carving table and hot closet 12 ft. long, which enables all joints, &c., to be kept hot while carving is proceeding. There is also a battery of two steam jacketed boiling pans, and three steam chambers for cooking vegetables.

For tea-making there is the "Waiwera" café fountain boiler, fitted with two three-gallon urns, supplying 350 pints of boiling water an hour for making tea and coffee. This fountain is manufactured by the Wellington Gas Company for New Zealand use, and is a popular institution in hotels, cafés, and tea-rooms.

Over the whole of the gas appliances there are two canopies through which, by means of a motor-driven Sirocco fan, the whole of the air in the kitchen is kept constantly pure and cool. In the pantry on each floor is a gas ring for the use of the maids for morning tea.

All the gas ovens, steam appliances, &c., are made by the well-known firm of John Wright, Birmingham, for whom the Wellington Gas Company are local agents. The experts of the Wellington Gas Company are ready at any time to advise on the installation of gas cooking and heating apparatus of any kind, and to demonstrate the many uses of gas in the household.

Notes from Scotland.

It Is Exactly 100 Years since Airdrie Gas-Works were erected. The Town Council, however, appear to be allowing the centenary to pass without any recognition. The undertaking, originally owned by a private company, was acquired by the Town Council 27 years ago.

The Glasgow Gas Department have now wiped out the debt incurred on account of the 1926 coal strike, and also the capital charges on new plant, so after March, if the price of coal does not rise, Glasgow may have cheaper gas. The Committee responsible for the Gas Department are considering a two-part tariff scheme.

An Additional Gasholder at an estimated cost of £5000 is under consideration by the Largs Town Council. A report by the Gas Committee states that the present storage accommodation is totally inadequate, and that in view of the great demand during the summer months, the position has become critical. Despite the introduction of electricity in the town two years ago, the gas consumption has continued to increase, and the amount of gas manufactured shows an increase of two and a half million c.ft. for the past year.

The Affairs of the Dundee Gas Department have for some months been the subject of an inquiry by the Dundee Town Council, especially in regard to the working of the tar distillation plant, and the collapse of the gasholder at Lochee. A series of questions were put to the Gas Manager, and the replies were considered recently by the Lord Provost's Committee, in private. As a result of their consideration, the Committee have decided to put another series of questions to be answered by subordinate officials of the Gas Department.

GAS SERVICE - - -

Discussed from the viewpoint of the Gas Salesman

"Hats Off" to the Engineer.

We can justly claim all along to have been in the forefront of the movement for better salesmanship in the gas industry. At the same time we have always endeavoured, successfully we believe, to maintain a just sense of proportion between production and selling sides, with an appreciation of the fact that, in an efficient undertaking, everyone from the managing director to the office boy is a salesman. Mr. S. H. Packer, whose reputation as salesman goes beyond the Bradford Undertaking which he serves, is a member of the Special Executive Committee which has been dealing with the B.C.G.A. education scheme; and when the scheme was under discussion at a recent meeting of the West Riding Circle, it was refreshing to hear his views as follows: "Speaking generally, they could say that nothing but the most generous help and kindness had been received from the Engineers ever since the Salesmen's Circles were first inaugurated. The very least they could do, therefore, as salesmen was to give earnest and serious consideration to any scheme which might lead to an improvement in sales methods."

Study How to Please Women.

In No. 11 of the series of articles which he is contributing to the "Gas Salesman," Mr. Herbert N. Casson emphasized this point once again, and indeed, as far as the showroom is concerned, it is important enough to bear endless reiteration. A few of his hints, in the style that has made Mr. Casson famous as a business writer, are:

To all retailers, women are the money-power. They buy at least 80 p.ct. of the goods. They spend four times as much as men do. They buy for themselves, for the children, and for the home. In the buying of stoves, lighting, furniture, carpets, &c., the husband may fix the price, but it is the wife who selects the goods.

Women, more than men, notice the appearance of a shop, both the outside of it and the inside. They do not like dinginess. They are attracted by bright colours and good lighting. They have a strong dislike of dust and untidiness. A woman does not enjoy shopping in a shop that looks like a warehouse. Both the shop and the people in it must be noticeably clean, to win the favourable opinion of women customers. Every woman likes a little bit of deference. She may not have arrived in a Rolls-Royce, but she likes to be treated as though she had. Women are more sensitive than men. They are more easily offended. And they are quick to notice the manner and attitude of a salesman. They resent curtness. They do not like to be greeted with such questions as—"What do you want?" or "Anything for you?" or "These are 10s. Do you want one?"

No woman, however unreasonable, should be allowed to leave a shop with a tale of rudeness on the part of the salesman. She will tell it, with embellishments, to a dozen other women. . . . A woman who comes in with a com-

plaint is a wounded customer. If she is not handled tactfully, she will become a lost customer.

A woman is loyal to a shop that serves her courteously and well. She prefers to go where she is known. She goes not only for the goods. She goes for the pleasure of buying in a shop that gives her a quick, courteous, personal service.

The Saleswoman in the Showroom.

In rather different vein, the writer of the women's page referred to the same subject. "I hope," she said, "that some Gas Managers will glance at our page this month, because this is a plea to them to employ at least one woman in their showrooms. The Secretary of a large concern, discussing this point with me, remarked: 'Yes, now you girls want to earn our money during the day as well as spend it at night!' Not at all; it is not my idea to suggest interference with the number of men hitherto engaged. My plea is that the presence of a woman in every showroom should be an additional modern asset towards increased business. In short, I ask for the appointment of an Ambassador of Goodwill between your undertaking and its women customers. Other departments have their specialists, so why not a woman chiefly to advise on home service, thus improving customer relations, stimulating the use of gas service, and increasing the sale of domestic appliances.

"Remember that the woman is the family purchasing agent or keeper of the purse strings; it is well worth giving her every consideration. Questions regarding the use of gas in the home, problems of safety devices, their use, necessity, and effectiveness, relative costs of operation, &c., are matters uppermost in the average housewife's mind and can be best met by a woman on the sales staff. Cookery demonstrations are excellent, but they are not held daily, nor is the demonstrator in constant attendance from the opening to the closing of the showroom doors. If a customer is interested in a culinary feat at the demonstration, and finds she is not quite successful on her own cooker, her natural impulse is to return to the showroom for further advice. If she meets a woman there, well and good. But believe me, she experiences something of a shock if she finds she has to explain her cookery failures to a mere (in this respect) man. She will most likely cover her confusion by asking the price of some appliance she has no intention of buying. She then returns home to write her query to her favourite woman's home journal."

Look Ahead with Window Displays.

There are perhaps more changes made in household arrangements and fittings at spring cleaning time than at any other period of the year. It is during the annual upheaval that things are cast out and new ones installed, and at this particular time few women fail to realize how old fashioned methods of working a house mean dreary labour. It is not always in the thoughts of the housewife at this rush period just what the gas industry can do for her. Forgotten for the moment is the handy and direct labour saving effect of some of the appliances which can be obtained, and after the replacement of carpets and furniture no one is inclined to have parts of the house dismantled again, and thus the instalment of new aids is put off till some future date.

With these thoughts in view, Mr. Easten Lee, in the January "Gas Salesman," suggested that a special "spring cleaning" window display should be planned and prepared in readiness for the psychological moment to remind consumers of the advantages of gas appliances *before* the work begins. He described, with an illustration, one such display, which can, of course, be varied according to individual needs, but which has the merit of being very easy to stage, and requiring only such "props" as can be quite simply procured or made.

How to Help the Contact Man.

Mr. R. J. Rogers, of Birmingham, is a firm believer in the value of the interchange of speakers from one Circle to another, and, following his admirable address to the London Circle in December, he recently gave the advantage of some of his great experience to Lancashire District salesmen.

He urged upon them the importance of a clearly defined sales policy for each undertaking, and an efficient and comprehensive administration to carry it out. But, so far as the policy is concerned—and this is a point liable to be lost sight of—success is largely dependent upon how far the approved policy has soaked into all the ramifications of the department. Unless great care is taken, the salesman may find that, before he can establish friendly relations with his client, he has first to beat down opposition or prejudice, due to annoyance arising from the "uncommercial" attitude of some other person connected with the undertaking. All employees, he suggests, who came *in any way* in contact with the public should be taken as fully as possible into the confidence of the management, so that they can give a reasonable explanation of any change or development, or at least direct the inquirer as to where information can be obtained. A correct interpretation of the sales policy is not difficult to achieve by periodical conferences of all engaged on the service side. This understanding, with a general and genuine *esprit de corps*, will do much to help the salesmen themselves.

As regards organization, a point made by Mr. Rogers was that comparatively few first tentative inquiries are received direct by the man who will eventually have to deal with them. They may come by telephone, or to a counter clerk, or in casual conversation with any member of the staff. Dealing efficiently with such inquiries is made infinitely more easy if they are correctly handled in the first instance. The salesman with a note "Call re water heater" is at a great disadvantage compared with the one who knows "Own house, back boiler worn out, small bathroom, have suggested storage heater." The latter arrives on the job and is able at once to convey the impression that the undertaking has already interested itself in the case.

To Increase Sales per Consumer.

With great confidence, born of experience in Birmingham, Mr. Rogers claimed that sales of gas per consumer can be substantially increased if we are prepared to organize our sales activities properly. The first essential is the taking of a census of each consumer's premises. By this means we ascertain whether the existing appliances of the consumer are giving satisfactory service, and we are able to advise in many instances the scrapping of inefficient apparatus and the fixing of up-to-date goods. If the right type of salesman is employed on this work we are able to judge the possibilities for the sale of new appliances, even if the salesman is unable to obtain an immediate order. We can interest the consumer in her own home as to the various advantages of gas, and incidentally obtain orders for the periodical maintenance of her existing appliances. Such a survey must be systematically made, so that each consumer's premises are visited, and the salesman employed on the work must have a thorough knowledge of the appliances available for use for every purpose. In Birmingham they have been carrying out such a survey for some time past, and arrangements have now been completed for a further number of trained salesmen to devote their whole-time activities to this particular work. The results obtained fully justify the employment of salesmen for this work. The service is greatly appreciated by consumers, and sales show every prospect of continued advance as a direct result.

The Education Scheme—and Remuneration.

Mr. Rogers has been very carefully through the proposed Education Scheme for Gas Salesmanship, and unhesitatingly admits that, the more thoroughly he studied them, the more convinced did he become that a new era in gas salesmanship can be brought about if the courses are enthusiastically taken up. He also sees in it a means of bridging the gap between those who claim that gas salesmen's jobs are not worth applying for, and those who maintain that men worth paying well are not available. "I feel," he said, "that the salaries paid to the gas salesman generally are inadequate, and in many cases not in proportion to his value to the undertaking. There is, nevertheless, great need for improvement in gas salesmanship, and in this connection I feel that the proposed scheme will be welcomed by the keen men on the sales side."

Standardization of Installation Practice.

Mr. Rogers' views on ventilation are well known, but he pointed out that, whatever one's views may be, the quite unjustified divergence existing in installation practice between one district and another is a serious handicap to salesmen. How are they, for instance, to convince a consumer that she needs a flue to a wash boiler if she has just come from a neighbouring undertaking where such flues are not fitted? May she not possibly come to the conclusion that all safety regulations are arbitrary, and to be disregarded with impunity? The gas salesman must do all within his power to ensure safety; at the same time he must be careful lest the public are stampeded into any scare such as the carbon monoxide "stunt" which is worked up from time to time by certain sections of the Press. Safety measures which suggest themselves are, he said, that all taps should be half nited wherever possible; the safety locking tap for cookers and floor cocks; and, in changing over from brazed to solid drawn tube, a specification that all tube used shall be solid drawn and of British virgin metal, since there is still a great deal of re-drawn tube on the market, which is more liable to seasonal cracking.

On convection and radiation, Mr. Rogers repeated the views he had expressed in his London Circle paper. A full report of the present address, entitled "Gas Salesmen's Problems," will appear in the February issue of the "Gas Salesman."

The Education - - - of the Gas Salesman

Discussion at a recent meeting of the Southern District (London Area) Gas Salesmen's Circle

The B.C.G.A. Scheme of Education and Training for Gas Salesmen was the subject for discussion at a meeting of the London Circle at 28, Grosvenor Gardens on Tuesday, Feb. 3, when Mr. W. H. BECKET presided over a large attendance.

The CHAIRMAN said it was particularly appropriate that Sir Francis Goodenough was present, because, whenever mention was made of the education of salesmen in connection with the gas industry or from the wider point of view, it was impossible to dissociate the subject from the name of Sir Francis. It would also be remembered that Sir Francis was the "Father" of the Gas Salesmen's Circles which were now functioning all over the country.

THE THIRD-PARTY VIEWPOINT.

Sir FRANCIS GOODENOUGH said that if he might regard himself as the "Father" of the Circles he had a very healthy family, and one of which he was very proud. He believed the Circles were doing an enormously good work, for both the members and the industry in which they were all so much interested and concerned. The salesmen, he believed, were going to have a further advantage from association with the British Commercial Gas Association or through its agency, by having put at their service in the near future a scheme for training in selling. As was known, the education scheme of the industry had concerned itself so far with the technical knowledge which was such an important basis for the commercial technical representative of the gas industry, of whom they spoke shortly as the salesman, and it had been felt for some time that the scheme was incomplete without a means for educating themselves and for getting their knowledge across to the consumer—*i.e.*, to put their knowledge into effect in such a way as would secure the maximum volume of orders for appliances and thus lead to an increase in the sale of gas; further, the giving of such service to the already secured consumer as would ensure his or her remaining a satisfied consumer, using as much gas as possible to his or her advantage. It was no use their being very well informed in regard to the technique of the business if they could not turn that knowledge into the final result of orders, which the salesman existed to secure.

He believed that they had now found the best way of organizing a scheme for such training.

One of the most important things in salesmanship, it should be realized, was the seeing of the thing from the customer's point of view and not thinking of it from the point of view of an officer of the gas company. There had been worked out for the Association, under the guidance and supervision of a committee of managers and expert gas salesmen throughout the country, a scheme which would help the sales staffs to deal with the proposition from the third party point of view.

FOUR FACTORS OF SALESMANSHIP.

Mr. HAROLD WHITEHEAD, who followed Sir Francis, said: Education in itself is not sufficient to make a person a successful salesman. There are four factors which, combined, produce the outstanding salesman. These four factors are: (1) Education. (2) Experience. (3) Personality. (4) Character. The really successful salesman, however much he is gifted with an agreeable personality, has developed a method, a definite technique of selling, which experience has proved is effective. A pleasing personality will do little more than win the customer's goodwill; it will encourage the customer to consider favourably the salesman's offering. But if there is nothing at the back of this agreeable personality, this favourable first impression fades away, and the customer departs "unsold." Yet the salesman must use and develop those qualities of mind, will, and body which combined form that undefinable thing called "personality." The question of experience can be dismissed with a word, for the necessity for gaining skill and poise in selling comes only with continual practical experience. Character is the keystone in the arch of the salesman's success; and character can be developed just as can personality.

Discussion.

The CHAIRMAN said it would be agreed that no stone had been left unturned to get an entirely good picture of what the problems were; and with that knowledge, carefully studied as it had been, the course which would be eventually presented would be everything that could be expected. He was pleased to think that they were not going to be given a theory but a collection of successes, so analyzed and placed before them that they could be used definitely to their advantage in the selling field. Mr. Whitehead said that when the course had been taken, the result to a man sitting for an examination would be that he would only be given a pass providing his record in the selling field justified it. This implied not only that they had to learn how to sell, but that the administration of all gas undertakings had to organize their selling in such a way that they had to tell the examiners what value a man had been in the selling field. That meant a very complete organization; and while the undertakings had undoubtedly done their best up to the present, they would have to study that side of the question every bit as much as the B.C.G.A. Committee had studied the selling side. A salesman could now be assured that he was no longer in a rut; if he could sell successfully, he would not be valued at his own valuation, but by the actual results, which would be tabulated and definitely known, and promotion would undoubtedly come by merit in the sales field.

He would ask Mr. Whitehead how long he anticipated the course would take and if it were to be divided into two sections—(1) for that generation of young and enthusiastic salesmen who were growing up in the industry, and (2) for those who might be called the "old brigade." The gas industry generally had to depend upon the "old brigade" for some years yet, until that growing band of enthusiasts had obtained the experience and knowledge which would make them fully valuable in the selling field. What steps were being taken to assist the old brigade in perfecting themselves?

Mr. W. M. MASON said that Mr. Walker would be pleased to reply to the questions raised as to how the scheme applied to different grades of salesmen. The scheme would affect the big bulk of salesmen who were now engaged in the gas industry; and full particulars would be issued in due course. Committees had been busily at work, and there was a tremendous amount of detail to be got through. It was a ready scheme, a thoroughly well-considered scheme built on actual experience, and would unquestionably be to the good not only of the individual salesman, but (and this was one of the main reasons why the B.C.G.A. had taken it up) of the industry.

PRACTICE AND THEORY.

He believed that good practice could come only from good theory, and that if the theory was wrong they were never going to make a success of things. Because the scheme was built on proper theories, the practical work would come out all right. He wanted to suggest to old and young alike, that a man was never too old if he was in his job; and one of the biggest elements in this scheme was going to be that of self-help. It might be said that the undertakings were going to benefit, and that if a man made himself more efficient, where did he come in? This scheme was going to sharpen their minds and make them better workmen, better able to do their job. It was all very well for folks in the industry to talk about the poorly paid salesman, but he (the speaker) wanted to suggest that there were plenty of big jobs and plenty of ordinary jobs, and he said seriously that there were more jobs than there were men fitted for them. Here was a thing that was going to help them to be more efficient, and to take a bigger job.

A COMPREHENSIVE SCHEME.

Mr. J. C. WALKER, Secretary of the B.C.G.A., explained that in the first place they had to appreciate that the B.C.G.A., in framing the course, had had to have regard to the whole country. They had (1) the young man just coming into the industry who required a technical as well as a selling training to enable him to become ultimately a competent sales representative; (2) the outdoor salesman with a technical training but without sales training; and (3) the sales representative without technical experience who often graduated from the clerical staff to the showroom, where he came into contact with the public. For the young man who came fresh into the industry the complete scheme provided for education in gas sales technology, economics, and the art of selling, and the course would mean two years' study. So far as he knew there had not previously existed a training scheme in the art of selling to assist the technically trained man, and the B.C.G.A. scheme filled that gap with a home study course to be taken in six months. The complete scheme was pretty comprehensive, as it ought to be, and he expected would be recognized by the Board of Education. It could be taken at the technical colleges, in the same way as the Institution Gas Supply Course, or as a correspondence course.

Mr. P. PICKERING (Rochester) expressed the hope that they

would all take up the scheme with a will. Self-help was going to be the chief part of the business.

Mr. MADGE suggested that the course would be welcomed if it did not involve too much study. It had been said that personality was the expression of the physical side, among other things; and thirteen working hours did not leave much time for the development of the physical side by means of sport.

Mr. H. MORRIS remarked that those present were a band of enthusiasts. The middle-aged and older men would welcome the scheme, as they would any scheme if it was going to be for the benefit of the industry. The briefer and more concise the course, the better. Would it include anything besides the selling of apparatus? Because he would like many of the middle-aged and older men to be "gingered up" in the matter of settling those disputes which occurred from time to time. Perhaps the fact that he proposed to take on the course would encourage some of the young men to take it up.

Mr. WHITEHEAD, replying to Mr. Madge, said that the course actually took hours and hours, because once they had those principles and methods in mind, every customer was an opportunity for a little more practice; unconsciously, without any effort, they would begin to apply in their daily selling those practices laid out in the course. The method of group studies would help them to carry the material into the successful practice on the floor. It had been asked whether anything was being said about the difficulties and disputes which were met with. They specifically brought out difficult situations, particularly where good salesmen were concerned, in order to show how they were being met; and they believed they had a fund of material for the answering of difficult questions. Frankly, they were more than delighted by the technical knowledge which came under their notice. It was of an unusually high order, and if the technique of selling was applied successfully the result should be outstanding in its success. That point was well covered, however; one whole handbook dealt with meeting the awkward questions and the unusual positions that arose through the difficult customer.

The meeting closed with a cordial vote of thanks to Mr. Whitehead, on the proposition of Mr. S. ADAMS.

IN CONTINENTAL COUNTRIES - - -

Abstract Translations from the Technical Press of France and Germany.

AMMONIA LIQUOR AS A FERTILIZER.

Dr. Bimschas, in Das Gas- und Wasserfach, 1931, 74, 13-16 (Jan. 3), gives information covering the preliminary results of an investigation carried out at the Mitscherlich Experimental Station at Marienburg at the request of the Marienburg Gas-Works. The work was undertaken in view of the present low revenue obtained by gas-works for sulphate of ammonia, with the object of creating an outlet for ammonia liquor as a fertilizer.

Ammonia acts as a strong base to plants, and even though ammonia liquor as such could be used as a fertilizer, further work was necessary before the material could come into extensive use in agriculture. It was necessary to explore the limits of its applicability in order to safeguard against bad results; otherwise, faced with failures, consumers might voice an emphatic "Never again." Many questions must be formulated and solved with a view to insuring that a too hastily developed propaganda may not do more harm than good to the problem of the adoption of ammonia liquor as a fertilizer.

The investigations now reported point the way to more specialized investigations, but they cannot claim to have solved finally the problem of the utilization of ammonia liquor. It can, however, be stated that the question of the possibility of using ammonia liquor for the better grade soils can be answered affirmatively to a much greater degree than is at present possible in the case of lighter soils.

Pot culture experiments were carried out on three types of "soil" typical of the worst possible and best possible conditions and of actual conditions such as might be encountered in agriculture. Since there are both alkali requiring and acid requiring plants, the investigations were carried out on plants typical of both species—namely, mustard and oats respectively. In each case experiments were carried out with a view to examining the growth of the plants under acid and alkaline conditions. Acid conditions were obtained by use of potash and superphosphate, alkaline conditions by use of potash, Thomas meal and calcium carbonate, the latter being added to intensify the alkalinity of the Thomas meal. Experiments with progressively increasing amounts of the nitrogenous fertilizer were carried out, in all cases in triplicate, 252 pot cultures having been prepared. Each pot contained 7 kilos. of "soil." Tests were carried out both with 2 p.ct. ammonia liquor and 20 p.ct. concentrated ammonia liquor. The nitrogen is expressed in terms of the weight of ammonium nitrate containing the equivalent amount of nitrogen. Control experiments with a neutral soil and ammonium nitrate were also performed. In all cases the accessory potash and phosphate fertilizers were added in the optimum amounts.

The results obtained are tabulated in the next column.

A phenomenon encountered halfway in the period of growth of the plants calls for mention. In spite of the alkaline nature of the ammonia, the plants treated with ammonia and an alkaline accessory fertilizer showed, at the time mentioned, a more abundant growth than did those with ammonia and an acid accessory fertilizer. In some cases, the difference became progressively less towards the end of the period of growth, or even reversed, though not always. A complete reversal was obtained, for example, in the case of oats (series 2A and 2B). However, the oats in series 3A and 3B showed decidedly the largest crop yields when the accessory fertilizers were alkaline. Even though the fertilizer in the C series is to be regarded as substantially neutral, the mustard crops with increasing addition of ammonium nitrate are comparable with those with increasing amounts of 2 p.ct. ammonia liquor showing decisively that ammonia liquor may be used for medium or good quality soils. There is, however, no similarity in the case of the sand series, though on this "soil" the oats did yield a crop whereas the mustard gave almost none. Even with ammonium nitrate and this "soil" there were irregularities in the case of mustard. Owing to lack of accommodation corresponding control tests with oats could not be made, and it was not possible to carry out as complete a series of tests with 20 p.ct. concentrated liquor as was possible with 2 p.ct. liquor. It is therefore not possible to decide yet which of these liquors has the advantage as regards plant nourishment.

Weight of Crops in Grammes.

Soil.	Series	Mustard. Nitrogen Addition Equivalent to x Grammes of NH_4NO_3. x = 0	1	2	3	4	Oats. Nitrogen Addition Equivalent to x Grammes of NH_4NO_3. x = 0	1	2	3	4
Sterile sand. (Not an actual agricultural possibility, but illustrating the worst conditions.)	1A	0·1	4·5	0·0	0·0	0·0	1·4	16·4	32·6	20·0	18·6
	1B	0·4	2·6	0·0	0·0	0·0	1·5	11·7	15·5	11·8	16·5
	1C		8·6	17·8	18·3	15·2					
	1D					0·0					4·5
	1E					0·0					0·0
Sandy soil containing loam and clay. (An actual agricultural possibility.)	2A	0·8	13·1	30·3	34·1	39·9	2·4	29·4	46·3	27·8	30·0
	2B	0·5	13·0	28·3	34·5	39·9	1·6	25·8	29·1	25·9	1·0
	2C		11·7	25·1	35·2	43·7					
	2D					35·7					73·5
	2E					23·0					73·2
A very good, low country soil, a loose and humous loam. (Corresponding with the best possible conditions.)	3A	4·5	14·9	34·5	45·5	53·5	4·4	27·8	61·7	64·9	62·5
	3B	3·2	13·2	29·7	45·5	48·0	4·1	23·6	50·9	72·7	80·1
	3C		20·7	28·9	46·8	54·1					
	3D					54·1					82·2
	3E					43·4					78·6

A Series.—2 p.ct. ammonia liquor used with potash and superphosphate.

B Series.—2 p.ct. ammonia liquor used with potash, Thomas meal, and 1·5 grammes of calcium carbonate.

C Series (Control).—Ammonium nitrate with potash, superphosphate, and 1·5 grammes of calcium carbonate (neutral fertilizer).

D Series.—20 p.ct. concentrated ammonia used with potash and superphosphate.

E Series.—20 p.ct. concentrated ammonia used with potash, Thomas meal, and 1·5 grammes of calcium carbonate.

Glover-West Vertical Retort Plant in New Zealand

A Progressive Move by the Gisborne Gas Company, New Zealand, was the Erection of a new Vertical Retort Plant by Messrs. West's Gas Improvement Company, Ltd., last December

Congratulations on the enterprise of the Gisborne Gas Company, best wishes for its future, and an optimistic outlook for the Gas Industry in New Zealand, were the keynote of addresses delivered at a complimentary luncheon tendered to the Directors of the Gisborne Gas Company, and invited guests, by West's Gas Improvement Company, Ltd., to mark the conclusion of their work in Gisborne. The firm have just completed the erection of a new vertical retort plant, which was officially taken over by the Company on Dec. 5.

Prior to the luncheon an inspection was made of the plant, and an adjournment was then made to the Masonic Hotel, where Mr. E. Rabbidge, New Zealand representative of West's Gas Improvement Company, presided, and welcomed the guests.

In proposing the health of the Gisborne Gas Company, Mr. Rabbidge said that the Company had not rushed haphazardly into the matter of new retorts, for after deciding that improvements were necessary, inquiries were made throughout New Zealand and elsewhere. Costs, comparisons, &c., were gone into, and it was finally decided to install the plant which had been handed over that day, a contract of which the Company felt very proud. The Gas Industry had not been long in existence in New Zealand, and the capital accounts of many companies were subject to great expansion from time to time owing to the changing conditions. He realized that one reason that made the Gisborne Gas Company decide on the improvement was their isolation, by which he meant that they were handicapped in regard to coal supplies. Perhaps the more important view, however, was that they wished to give their customers the very best service possible, and this desire was, he felt sure, the deciding factor. Messrs. West's Gas Improvement Company liked to deal with enterprising companies, and were always willing to do the best they could to make a success of their work even after it was completed. That was the reason why the speaker was stationed as their Manager in New Zealand.

Nearing the Jubilee.

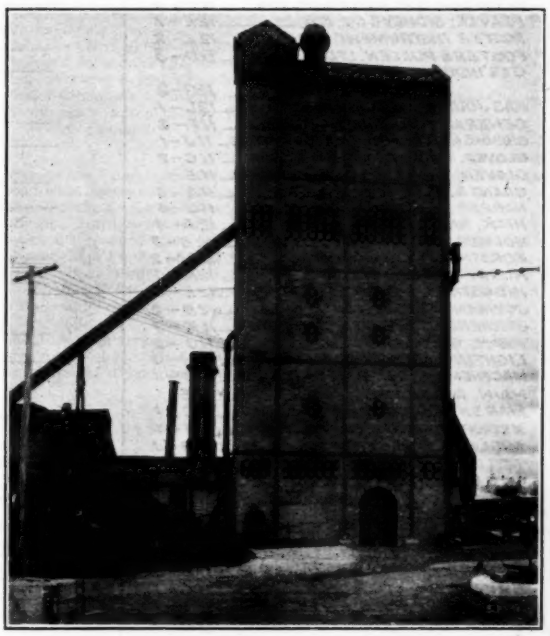
Mr. Cederwall, responding to the toast, said it was interesting to record that the Gisborne Gas Company was nearing its jubilee, having been started in 1884, forty-six years ago. The operations of gas companies were continually developing, and showing an increase in output. This was being done notwithstanding opposition, and was the case not only in Gisborne, but throughout the world. It was clearly evident that gas was not being pushed aside by its opponents. In regard to the Gisborne Gas Company, continued Mr. Cederwall, it was interesting to note, as showing the rapid strides in that town, that the hire purchase business of the Gas Company in 1927 was £351, but to-day it was £11,700.

Mr. Cederwall then proposed the health of "The West's Gas Improvement Company, Ltd." In 1928, said Mr. Cederwall, Mr. Prince and the speaker went to Dunedin to see the taking over of one of the Glover-West plants by the Dunedin City Council. There they met Mr. West, and on their return put in a report on their visit. They had also interviewed managers and engineers at Dunedin, Wellington, and Napier. On June 1, 1929, the Company signed the contract, and the plant was ordered. The contract allowed for twenty months to complete the work. On Sept. 17 last the new plant had been started up, fifteen months after signing the contract, and now they were celebrating the taking over of the plant from the Company. The results fully justified the expenditure, and the Company had done all they claimed. The Gisborne plant comprised the only 40-in. retorts in the Dominion to-day, and every small gas company operating in New Zealand was eagerly looking forward to seeing the results at Gisborne.

Mr. Rabbidge, responding, said he had had a life-long experience in the Gas Industry, and in New Zealand he had seen a number of changes. He had been told that the Gas Industry was doomed, but to-day it was more than holding its own. If they consulted the share market lists they would find that all the gas companies in New Zealand were holding their own, and were in a good financial position.

Mr. H. D. Chrisp proposed "The Gas Industry of New Zealand," coupled with the name of Mr. Pickering, Manager and Engineer at Napier. The gas companies of New Zealand had their beginning in a small way, but had survived their difficulties, and thought the initiative of those at the head of affairs was responsible for companies being now in a position to install new plant.

Mr. L. Pickering, in the course of his response, said that in the past the gas companies had been told they were going to be dropped out by their competitors, but that had not eventuated yet. Gas companies now were in a better position than they had been for years. The balance-sheets were as good as ever they had been. Wellington hoped, and Gisborne also hoped, that the new plant would soon be paid off from the saving in cost. They should now be able to get 23,000 c.ft. of gas per ton of coal carbonized. He felt sure the new plant would render good service to the consumers. Millions had been spent in New Zealand on hydro-electricity schemes, and mistakes had been made, but the Gas Industry had plodded steadily along. On behalf of the gas companies of New Zealand, he hoped the Gisborne Gas Company would continue to progress even more in the future than it had done in the past.



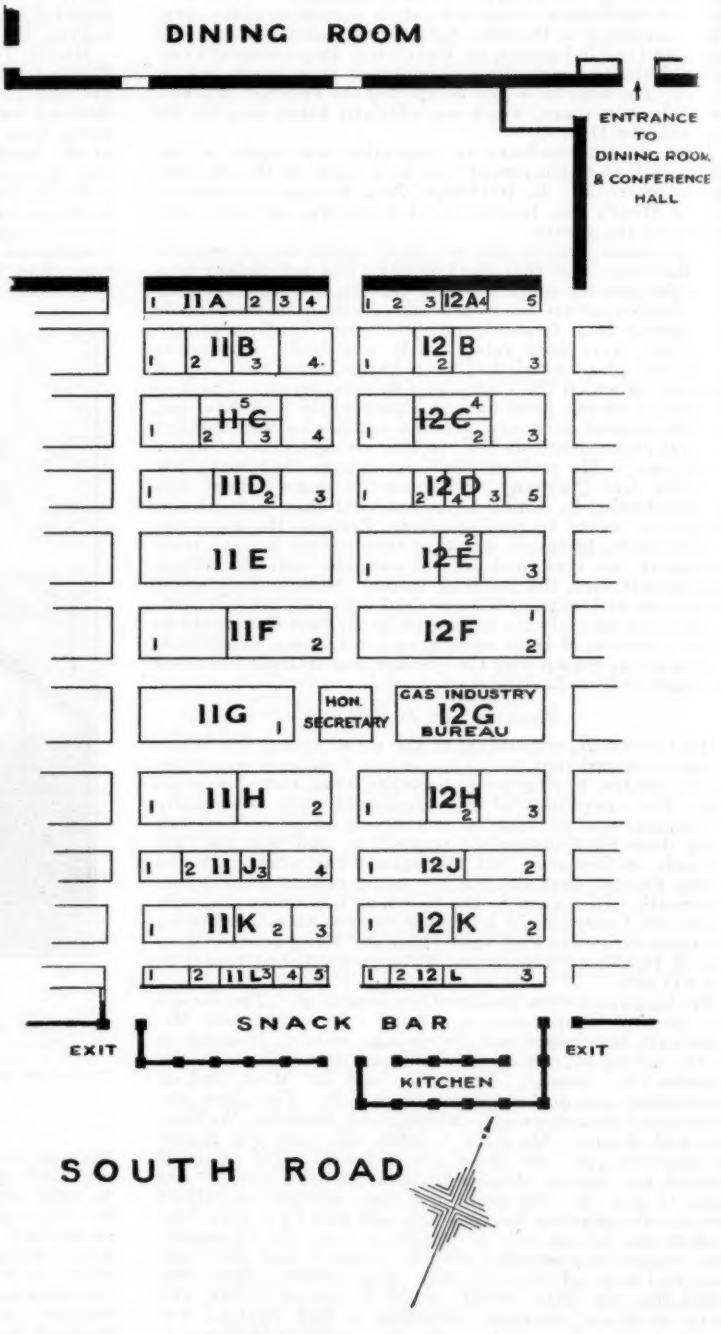
The New Installation at Gisborne, N.Z.

It consists of 4 Glover-West 40-in. New Model Vertical Retorts with two producers. Coal and coke are handled in a West lip-bucket conveyor, and an electric lift is provided as a standby. The whole of the operations are carried out by one man per shift. The nominal capacity is 300,000 c.ft. per diem.

BRITISH INDUSTRIES FAIR, 1931

GAS SECTION

ALDER & MACKAY, LTD.	11B-3
ASBESTOS CEMENT BUILDING PRODUCTS LTD.	11D-1
BRADDOCK J. & J.	11A-1
BRAY GEO., & CO., LTD.	12H-1
BRITISH GAS INDUSTRY, BUREAU	12G
BRITISH FURNACES, LTD.	11K-2
BRITISH ROAD TAR ASSOCIATION	12B-1
BROMFORD TUBE CO., LTD.	12K-1
CANNON IRON FOUNDRIES, LTD.	11F-1
CELLACTITE & BRITISH URALITE, LTD.	12C-2
COWAN, W. & B.	12F-1&2
C. C. FIRES, LTD.	12A-1,2&3
CORT, ROBERT & SON, LTD.	11B-2
DAVIS FURNACE CO., THE	11B-4
DEAN, W. H. & SON, LTD.	11D-2
DISTRICT IRON & STEEL CO., LTD., THE	11A-2
DONKIN, BRYAN & CO., LTD.	11L-5
ECONOMIC GAS BOILER CO., THE	11C-4
FLAVEL, SIDNEY & CO., LTD.	12E-1
FOSTER INSTRUMENT CO.	12L-2
FOSTER & PULLEN, LTD.	11D-3
GAS INDUSTRIES SECTION (HON. SECRETARY)	11G-2
GAS JOURNAL, LONDON	12L-1
GENERAL GAS APPLIANCES, LTD.	11F-2
GIBBONS (DUDLEY) LTD., & GIBBONS BROS LTD.	11J-1
GLOVER, GEORGE & CO., LTD.	11C-2
GLOVER, THOMAS & CO., LTD.	11E
GRANT & WEST, LTD.	11A-3
HARPER, JOHN & CO., LTD.	11C-4
HICK, HARGREAVES & CO., LTD.	12A-4
HOLMES, W. C. & CO., LTD.	12C-3
HORSTMANN GEAR CO., LTD., THE	12H-2
"HURRY" WATER HEATER CO., THE	11K-3
INDUSTRIAL RESEARCH LABORATORY	12E-3
JOYMANCO (BRIGHTON), LTD.	12B-2
JUNKERS & CO. (GREAT BRITAIN), LTD.	11K-1
KENT, GEORGE, LTD.	11J-2
LIGHTING TRADES, LTD.	12H-3
MACPHERSON, DONALD & CO., LTD.	11C-5
MAIN, R. & A., LTD.	11E
MARSH, R. & COMPANY	11C-1
METROPOLITAN FUEL CO., LTD., THE	11J-4
MIDLAND BRASS FITTINGS CO.	12D-4
MILLARS MACHINERY CO., LTD.	11L-1
MOLER PRODUCTS, LTD.	12D-3
NATIONAL GAS ENGINE CO., LTD., THE	12J-1
NEW GEYSERS, LTD.	12D-1
PARKINSON STOVE CO., LTD., THE	12F-1&2
PARKINSON, W. & CO.	12F-1&2
P. B. SILLIMANITE CO., LTD., THE	11L-3
RADIATION, LTD.	11G-1
SAWER & DURVES	11A-1
SIGMA INSTRUMENT COMPANY	11L-4
STOURBRIDGE REFRACTORIES CO., LTD., THE	12D-5
STOVES, LTD.	11B-1
SUGG, WILLIAM & CO., LTD.	12C-1&4
SUTHERLAND, A. G., LTD.	12J-2
SUTHERLAND METER CO., LTD., THE	11H-2
TAUNTON, JOHN & JOSEPH, LTD.	12E-2
TENNANT, J. & SONS	12D-2
TIMMIS & CO., LTD.	11J-3
TUBES, LTD.	12K-2
TURNER, F. (ART METAL), LTD.	11C-3
WALKER, C. & W., LTD.	12A-5
WALLER, GEORGE, & SON, LTD.	11L-2
WATERLESS GASHOLDER CO., LTD.	12B-3
WELSBACH LIGHT COMPANY, LTD.	12H-3
WHITEHOUSE, WM., & CO., LTD	12L-3
WILLEY & CO., LTD.	11H-2
WILSON, GEORGE, GAS METERS, LTD.	11H-1



PLAN OF THE STANDS

WITH NAMES AND POSITIONS OF EXHIBITORS

The full programme of the Joint Gas Conference, to be held on Tuesday, Wednesday, and Thursday, Feb. 24, 25, & 26, will be found on p. 263 of the "JOURNAL," Feb. 4

British Industries Fair

Official Visits, Conferences, Lunches, &c.

We publish below a preliminary list which has been issued of official visits, conferences, lunches, &c , of various trade societies and associations, which are to take place during the whole period of the British Industries Fair at Birmingham, Feb. 16 to 27

	Location.
FRIDAY, FEB. 13.	
Press View	" "
MONDAY, FEB. 16.	
Official Visit of Lord Mayor of Birmingham	Bradford Room
TUESDAY, FEB. 17.	
Visit of Lord Mayors, Lord Provosts, Provosts, and Mayors of Municipalities of United Kingdom	Royal Room
Institution of Mechanical Engineers	Bradford Room
British Engineers' Association	" "
WEDNESDAY, FEB. 18.	
Ironmongers' Federated Association (Inc.)	Royal Room
British Junior Gas Associations	Bradford Room
Inter-Universities Metallurgical Congress (Tea)	" "
THURSDAY, FEB. 19.	
Institution of Electrical Engineers—South Midland Centre	Bradford Room
Incorporated Municipal Electrical Associations	" "
Association of Consulting Engineers	" "
Association of Supervising Electrical Engineers	" "
Electrical Contractors' Association (Inc)	" "
Electrical Contractors' Association, Scotland	" "
Electrical Wholesalers' Federation, Ltd.	" "
Electrical Merchants' and Manufacturers' Association	" "
Illuminating Engineering Society	" "
Municipal Tramways and Transport Association	" "
Midland Home Grown Timber Merchants' Association	Royal Room
National Federation of Builders' Merchants	" "
National Federation of House Builders	" "
National Association of Heating, Ventilating, and Domestic Engineers	" "
FRIDAY, FEB. 20.	
British Commercial Gas Association Salesmen's Circles	Bradford Room
Birmingham and District Association of the Institute of Civil Engineers	Royal Room
Institute of Metals	" "
Institution of Welding Engineers	" "
Association of Mining Electrical Engineers	" "
British Plastic Moulding Trade Association	Conference Hall
SATURDAY, FEB. 21.	
Electrical Power Engineers' Association	Bradford Room
Institution of Electrical Engineers, Students' Section—South Midland Centre (Tea)	Royal Room

	Location.
MONDAY, FEB. 23.	
Annual Banquet of the Birmingham Chamber of Commerce	Grand Hotel
Members of Parliament and Bankers	Bradford Room
Engineering and Allied Employers' Association (Birmingham, Wolverhampton, and Staffs. District)	" "
Coventry and District Engineering Employers' Association	" "
British Cast Iron Research Association	Royal Room
Institute of British Foundrymen	" "
TUESDAY, FEB. 24.	
Lord Mayor's Reception to Exhibitors and Buyers	Council House
Institution of Electrical Engineers—Council	Bradford Room
Incorporated Municipal Electrical Association	" "
British Electrical Development Association	" "
Incorporated Association of Electric Power Companies	" "
Provincial Electric Supply Association	" "
Tramways' and Light Railways' Association	" "
Electrical Association for Women (Birmingham and Midland Branch) (Tea)	" "
Midland Federation of Building Trade Employers	Royal Room
Visit of Members of City Council (Tea)	" "
British Electrical Development Association (Dinner)	Queen's Hotel
WEDNESDAY, FEB. 25.	
Institution of Gas Engineers	Bradford Room
National Gas Council	" "
Society of British Gas Industries	" "
British Commercial Gas Association	" "
Association of British Chambers of Commerce	" "
Junior Chambers of Commerce (Tea)	Royal Room
Birmingham and District Foremen's and Clerk of Works' Association (Tea)	Bradford Room
THURSDAY, FEB. 26.	
Incorporated Association of Retail Distributors'	Bradford Room
National Chamber of Trade	" "
Birmingham Consular Association	" "
National Hardware Association	" "
London Export Merchants	" "
Birmingham Export Merchants	" "
Birmingham Hardware Factors' Association	" "
Ironmongers' Federated Association (Inc.)	Royal Room
FRIDAY, FEB. 27.	
Institute of Quarrying	Bradford Room
Institution of Municipal and Borough Engineers	" "
Institute of Public Cleansing	" "

Royal Visits to the Fair.

In addition to seeing the Cotton Textile Exhibition at the White City, London, on the opening day, next Monday, Feb. 16, Her Majesty the Queen is expected to pay a visit to the main London Section of the Fair at Olympia on the following day, accompanied by H.R.H. the Duchess of York.

The Duke of Gloucester is to be the guest of honour at the Government banquet at the Guildhall, London, on Monday night, when his speech will be broadcast; and His Royal Highness will accompany the Queen to the Fair on the following day.

Princess Mary, Countess of Harewood, and Lord Harewood are to visit the Birmingham Section of the Fair on Wednesday, Feb. 18.

The Birmingham Section will also be visited by the Prime Minister, who is to be the principal guest at the annual banquet of the Birmingham Chamber of Commerce on Monday, Feb. 23.

The Joint Gas Conference.

The Joint Gas Conference under the auspices of the Institution of Gas Engineers, the Society of British Gas Industries, the British Commercial Gas Association, and the National Gas Council will take place at Castle Bromwich, on Tuesday, Wednesday, and Thursday, Feb. 24, 25, and 26. Sir Arthur Duckham will preside, and will deliver his address at the opening meeting on the Tuesday morning. This meeting will be followed by an Official Gas Industry Luncheon, and the afternoon, as will be the case on the two other days, will be devoted to an inspection of the exhibits at the Fair. On the Wednesday (when Sir Arthur Duckham will be supported by Mr. H. E. Copp, President of the Institution of Gas Engineers) Dr. C. H. Lander will give an address on " The Gas Industry and Its Relation to the Fuel Problems of Great Britain," and on this day the proceedings will be followed by luncheon at the invitation of the Fair Management Committee. When he takes the chair on the Thursday, Sir Arthur Duckham will be supported by Mr. John E. Daw, President of the British Commercial Gas Association, and on that occasion there will be an address by Sir Francis Goodenough on " The Principles of Salesmanship."

Junior Associations' Day.

Full facilities are offered once again this year for members of the Gas Industry to visit the British Industries Fair at Birmingham next month.

On Wednesday, Feb. 18, the Junior Gas Association will gather at Birmingham, and the Fair Authorities have very kindly extended an invitation to luncheon to members. In the morning a meeting of the Junior Associations will be held in the Conference Hall, which adjoins the Gas Section, at 11.30, when an address will be given by Mr. Harold E. Copp, President of the Institution of Gas Engineers. Luncheon will be served in the Bradford Rooms, adjoining the Conference Hall, at 1 p.m., after which members will be at liberty to visit the Exhibition.

Salesmen's Visit.

On Friday, Feb. 20, the British Commercial Gas Association are organizing an official visit of members of the Gas Salesmen's Circles to the Fair, but, in order that the utmost amount of time may be spent in inspecting the Gas Industries Section, no formal meeting is to be included in the day's programme. The Fair Management Committee are here again co-operating with the British Commercial Gas Association in the arrangements for the day by providing luncheon and issuing tickets of admission to the Fair.

Cheap travel facilities have again been arranged for members taking part in these visits.

THE "JOURNAL" TECHNICAL RECORD

Which also contains Full Reports of Meetings of Gas and Allied Associations ———

Institution of Gas Engineers

26th and 27th Reports of the Joint Research Committee

Since no further contributions to the discussion on the 26th and 27th Reports of the Joint Research Committee have been received, Dr. Dent submits the following as an amplification to his reply at the meeting.

Discussion on the Twenty-Sixth Report.

Dr. Dent writes in answer:

I am in complete agreement with Mr. Griffith's remarks on the mechanism of oil cracking and also on the influence of side chains attached to the nuclei of aromatic constituents of the oil. Such matters were not, however, considered in the present report, since they formed part of the memorandum on creosote read before the Institution last year.

Dr. Anderson called attention to the relatively high yield of gas obtained by cracking creosote at 1100° C., in view of the practice at the Frankfurt Gas Company's Works of injecting coal tar or lignite tar into the fuel bed of the generator. The possibility of using creosote in this way has been considered, and it is with such an idea in mind that the cracking of creosote at high temperatures is being studied. It is hoped that the results of these experiments will throw some light on this method of working.

Discussion on the Twenty-Seventh Report.

Dr. Dent writes in answer:

Mr. Rhead commented on the considerably larger quantity of tar obtained in the present test than in the tests carried out by Dr. Parker at Birmingham. I am of the opinion expressed by Dr. Pexton that differences in the qualities of the oil used were mainly responsible for the differences in the yields of tar obtained. It is, however, pointed out in the report that the back-run, since it necessitated an increase in the rate of oil admission, introduced a factor which would tend to decrease the yield of oil gas. Laboratory experiments indicate that such a decrease would depend on the change of the relative concentrations of oil gas and blue gas, more than on the shorter time which the oil vapours spent in the carburettor and superheater.

The figures given in the report show that the amount of steam raised in the generator boiler was equivalent to approximately 75 p.ct. of the amount raised in the waste-heat boiler. This might be considered to be a high figure in view of the considerably larger heating surface of the waste-heat boiler, but it must be remembered that, whereas the waste-heat boiler took up heat from gases at a relatively low temperature, the generator boiler was exposed to intense radiant heat from the fuel bed.

As Mr. Rhead pointed out, the rate of production of blue gas during the back-run phase was somewhat higher than during the up-run, in spite of the back-run occurring towards the end of the steaming period. This is a result of the high rate of steam admission during the back-run. The make of blue gas per day would probably have been greater, however, if the rates of steam supply during up-run and back-run had not been so widely different, but, as stated in the report, the rates of steam supply were governed by other considerations.

Dr. Pexton indicated that the figure given in Table C for the percentage of steam decomposed is 68 and that in Table I. it is 60·8. The relation between these two figures is shown in Table V., where it can be seen that 60·8 is the percentage decomposed of the total steam supplied to the set, whereas 68·2 is the percentage decomposed of the steam which actually passed through the fuel bed. The latter figure, which takes no account of the steam left in the carburettor and superheater at the end of the back-run, is the more characteristic of the condition of the fire. Consequently this figure was chosen for Table C., where it is shown that the rate of steam supplied to the fuel bed in the present test was double the rate used in the tests of the 7th Report. The percentage of this steam which was decomposed, however, was approximately the same.

Dr. Parker suggested that the rate of steam supplied in the tests at Birmingham could have been increased with a corresponding increase in the rate of gas production. It is doubtful, however, whether the steaming rate could have been increased to that used in the present test without a considerable decrease in the percentage of steam decomposed, or, if the temperature of the fuel bed were raised to prevent such an occurrence, without the advent of clinker troubles.

As stated in the General Introduction to the Report, time did not permit of a full description being given of the methods of analysis and sampling used. The conciseness of this part of the report is probably responsible for Dr. Williams having the mistaken impression that the analyses of the blue gases given do not represent true average samples of the corresponding gases. It can be emphasized here that, although the samples of blue gas were collected during the test at a constant rate, irrespective of the rate of gas production, the analyses of such samples were all corrected, using the results of a special study of the variations in the rates of the production of blue gas during the cycle. The method suggested by Dr. Williams of using an orifice plate in the gas main could not be employed on the carburetted water gas plant tested, where only a short main between generator and carburettor was available, in which the blue gas varied in density and temperature throughout the run. The presence of tar fog, together with variations in density, also introduces difficulties into the study of fluctuations in the rate of carburetted water gas production when a similar method is used. Consequently, in the tests at Stratford, chemical methods were used which, it is hoped, will be described in full in a future report.

Dr. Williams also suggests that the air supplied during the blow period be measured by an orifice plate rather than by calculation from the results of a carbon balance. It may be first pointed out that any error in the measurement of the volumes of air and blow gases has no influence on the figures given for the efficiency of the production of blue or carburetted water gas. When, however, the results of the tests are to be used in the consideration of the reactions which occur in the fuel bed, it is essential that all measurements be made with the utmost possible accuracy. It is therefore appreciated that, when testing such a complicated process as the manufacture of carburetted water gas, it is desirable to introduce as many check measurements as possible, and that, from this viewpoint, direct measurement of the air supplied to the generator is valuable. During the test, a record was made of the air supplied to the generator as indicated by the gauge of a Venturi meter in the blast main. The figures so obtained were not used in the calculation of the results of the test, since it was believed that more reliance could be placed on data obtained from a carbon balance. The lay-out of the air main was such as to prevent accurate calibration of the Venturi meter.

On the type of plant tested in the present report, it is not thought that the "carbon balance" method of calculating the volume of air required is so liable to error as Dr. Williams suggested. The method has been criticized previously* in that it neglects any carbon burnt during clinkering, and any carbon lost in the solid form in the waste gases. The plant at Stratford was equipped with a self-clinkering grate, and all ashes and clinker were quenched inside the generator. The small door in the air conduit beneath the grate was open for less than one minute during an eight-hour shift. Consequently the amount of carbon burnt during the periodic inspection of the fire was negligible. The presence of the Centriflovane dust extractor on the stack reduced any errors due to the second cause. Consequently it is thought that the direct measurement of the air by orifice or pitot tube, even if such measurement had been carried out under the most favourable conditions, would not have led to any greater accuracy. This opinion is confirmed by the figures given in Table XIII.—the heat balance of the generator. In this

* Travers, J. Soc. Chem. Ind., 1924, **43**, 355T.

balance, the difference item 12, which represents losses of heat by radiation, &c., and errors, is only 1·16 p.ct. of the heat supplied to the generator. In the preparation of this balance no allowance was made for the potential heat of the H_2S in the blue gases. Making such an allowance decreases the item to 0·79 p.ct. of the heat supplied. This figure does not deviate from the true figure for the loss of heat by radiation, convection, conduction, &c., by more than half of 1 p.ct., and is well within the limits of experimental errors liable to occur in measurements other than that of the volume of air supplied.

Travers* has suggested that the results of water gas tests should be checked by balancing the heat changes taking place during the "blow" against those of the "run" periods. It was on the results of such balances that he expressed the opinion that the "carbon balance" method of determining the volume of the air supplied to the generator is liable to errors of from 5 to 10 p.ct. It may be pointed out that, fundamentally, such a balance is in no way different from the type given in Table XIII., and, consequently, does not serve as a further check. The balance, as prepared by Travers, involves many assumptions, and, if any variation is observed between the final difference item in such a balance and the corresponding item in a balance drawn up as in Table XIII., the variation arises out of errors in these assumptions.

* Travers, J. Soc. Chem. Ind., 1924, **43**, 355T.

Incomplete Combustion: Its Importance, Recognition, and Prevention

[Discussion on Mr. E. W. B. Dunning's Paper before the London and Southern District Junior Gas Association at the Westminster Technical Institute on Jan. 30—the President, Mr. T. H. Prater (Margate) in the Chair. The Paper was published in last week's "JOURNAL."]

The PRESIDENT (Mr. T. H. Prater), in opening the discussion, thanked Mr. Dunning very heartily for his most interesting address. He had covered the matter very fully, but there were one or two points he would like to raise. He believed that in the 19th Report of the Gas Investigation Committee the amount of carbon dioxide in the waste gases from geysers burning gas at their normal rate was mentioned as 8·3 p.ct., whereas in the chart given in the paper (fig. 8) it would appear that in the curve the carbon dioxide did not reach that amount. Mr. Dunning had referred to the use of cheap appliances, and this was a question which confronted all distribution men. He urged that gas undertakings should be able to supply cheap flueless heaters on the hire system in order to overcome this difficulty. Mr. Prater mentioned the case of geysers in property near the gas-works being supplied with gas at too high a pressure, and they consequently worked under very bad conditions. This would seem to indicate the need for governors in such situations. Finally, he referred to the use of the old batswing burner in radiators to give a flickering effect. Was this a question of oscillating pressure?

Mr. J. W. WOOD (Research Chemist to the Joint Research Committee of the Institution of Gas Engineers and the University of Leeds, and Junior Vice-President of the Yorkshire Junior Gas Association) said that his thanks were due to the London Junior Gas Association for the invitation to listen to a paper upon a subject in which he was keenly interested. The importance of the subject was demonstrated by the amount of attention given to it by the Institution of Gas Engineers and its Research Staff, and by the Gas Light and Coke Company at Watson House. They were all working towards a common end—namely, to ensure that the consumer was supplied with safe, reliable, and efficient appliances. He had seen the work in progress at Watson House, and from personal experience realized the amount of labour involved and the many pitfalls which had to be avoided. Mr. Dunning was to be congratulated upon presenting so clear a résumé to the London Junior Association.

THERMAL LOSS.

He would first like to make a few comments upon Table 1. If the carbon monoxide/carbon dioxide ratio for a coke fire was correctly given, it seemed to him that the corresponding thermal loss should be nearer 20 p.ct. than 10 p.ct., and there should be a similar increase in the case of the coal fire. Further, in the case of the coal fire carbon monoxide was not the only combustible escaping, so that the figure must be still greater. In short, difference of efficiency in combustion between gas and solid fuel was much more in favour of gas than Table 1 suggested. In the course of the paper he had observed one of his own figures for carbon monoxide in the air—five parts per million—and he noted that it was only one-tenth of the amount for certain districts in London, Paris, and New York. This must not be taken as a valid comparison of pure country air with town air; for Meadow Lane, despite its name, was in an industrial district. The figures emphasized rather the huge contamination produced by heavy motor traffic, and one could not be surprised at the Vauxhall figure, especially if obtained during a traffic hold-up. In the open space over the river, nearby, he would not expect the carbon monoxide concentration to exceed five parts per million. Carbon monoxide results where motor exhaust contamination was involved were always open to suspicion unless every care had been taken to remove hydrocarbons before determining the carbon monoxide.

The question of allowance for carbon monoxide in air was of great importance in the testing of gas appliances with very low carbon monoxide output. For some it might be directly determined and be deducted, although the resulting negative carbon monoxide production which was sometimes obtained was somewhat puzzling until its significance was realized. For those appliances where practically the whole of the air passed sufficiently close to the flame zone to be raised to a reacting temperature—*e.g.*, geysers, surface combustion heaters, and certain syphon stoves—no correction was needed. The correction in intermediate cases was uncertain, and the best solution was to carry out the tests in as pure an atmosphere as possible. Generally speaking, they did not find it desirable to reduce the excess air below 15 p.ct. of the theoretical air-requirement of the gas, even with an appliance like a surface combustion heater. With such small amounts of excess air it was essential that all the air should pass through the flame zone; otherwise there would be local deficiency and consequent production of carbon monoxide, even though the final exit gases contained free oxygen.

EFFECT OF A SOLID IN THE FLAME.

Mr. Dunning had rightly placed deficiency of air and chilling as the two main causes of carbon monoxide production, continued Mr. Wood, and the greater portion of his remarks applied to geysers. He would like, however, to stress the importance of the immersion of a solid in the flame—frequently unavoidable—as a cause of carbon monoxide production, even in cases where chilling, in the ordinary sense of the word, was not involved. He referred to the griller, the gas fire, and the incandescent mantle. Whenever they got a noisy flame, and especially penetration of the inner cone of the flame, the carbon monoxide showed a marked increase. A carbon monoxide production curve like fig. 8 in the paper was characteristic of many appliances besides geysers. The only exception with which he was acquainted was the inverted incandescent burner, given in the 25th Report of the Joint Research Committee, where the carbon monoxide production per 10,000 of gas burned increased to a marked extent as the gas rate was reduced below ½ c.ft. per hour. Mr. Dunning had provided a second example in the case of the gas fire with damaged radiants.

Mr. Wood said he had no wish to enter into a controversy as to the best method of expressing carbon monoxide results. It was, however, most important that they should be expressed in such a form that they would not be capable of misinterpretation by the public or by their competitors. When he adopted parts per 10,000 of gas burned as the basis of comparison, it was because of the definiteness and simplicity of the figure, and its utility in subsequent calculations. He did not favour the uniform comparison of appliances upon a thermal basis. Sometimes gas was required for lighting, sometimes for room-heating, and sometimes for water-heating, in which case the gas consumption needed to bear no relation to the size of the room in which the appliance was installed. Then, again, the American Gas Association and similar specifications assumed arbitrary conditions, not always attainable, and assumed uniform diffusion of the products of combustion throughout the room. Personally, he felt that with a statement of carbon monoxide production per 10,000 of gas burned and the gas rate they were able to define the fundamental conditions. The calculation of the maximum concentration of carbon monoxide which might be attained should be carried out for the specific cases in which they were interested, bearing in mind the peculiar local conditions of installation, and the use for which the appliance was intended.

In conclusion, Mr. Wood remarked that the Yorkshire Junior Gas Association rarely came into contact with the London Junior Gas Association, and he expressed the hope, as Junior Vice-President of the former Association, that representative parties of the two Associations would meet at Castle Bromwich at the British Industries Fair.

The PRESIDENT said that one point which should have particular emphasis laid upon it was in regard to the carbon monoxide production of the inverted burner when the gas was dimmed. This ability to dim should be one of the selling points of the positive gas switch. It had been said that the carbon monoxide production in such cases was considerably more

serious than the small amount existing in the products of combustion in a gas heater.

Importance of Air Supply.

Mr. J. G. Clark (Manager of the Research and Training Section, Watson House) said that he was well acquainted with the work which Mr. Dunning had been engaged in. An important point was that the air supply to a gas appliance must not only be adequate, but also enter at the right place. Those of them who were familiar with the older types of gas cookers would realize the enormous amount of air that passed through the oven. Nine-tenths of the air never reached the combustion zone at all. This meant dilution of the products and a resultant inefficiency of the oven. That air could have been cut down very much more than it was. The air must come in at the right place in order that it might serve its purpose in assisting the correct combustion in the appliance. Mr. Clark referred to the absence of carbon monoxide in the natural gas in America and to the fact of men working in and around the gas with no ill-effects to themselves. Continuing, he emphasized what Mr. Dunning had said in regard to the misunderstanding generally prevalent as to the poisonous qualities of carbon dioxide. It was often referred to as a poisonous gas, whereas it was actually nothing of the kind. It served a very essential part of the animal economy, and they should all use their influence to bring it home to the public that carbon dioxide was *not* a poisonous gas. From what they had heard from Mr. Dunning on the question of gas rate they must realize that no gas appliance need be dangerous provided the gas rate was not excessive. Any piece of apparatus which was dangerous in certain conditions could generally be rendered safe simply by lowering the gas rate. Mr. Clark referred to the different standards adopted in this country and in America in regard to combustion. The American Gas Association had a minimum standard below which no appliance must fall in the matter of combustion, and it was a fact that gas undertakings in America themselves criticized appliances that came into their hands with a greater keenness than the A.G.A. Standards would seem to indicate. To pass the A.G.A. Standard was one thing, but to pass the standard of the individual gas undertakings was quite another thing, and it was safe to say that the actual standards in America were quite as high as those in England. Mr. Dunning had pointed out that one might have an adequate inlet but an inadequate outlet on an appliance; inlet and outlet, however, must always be considered together. In point of fact, whichever dimension was the smaller determined the whole matter. Modern flueless heaters had very efficient combustion, which was most satisfactory, and it was gratifying to observe that large and increasing numbers were now in use and were doing very good work. They were appliances which would serve the public well and were in accordance with the best standards of the Gas Industry.

Heating Value of Luminous and Aerated Flames.

Mr. C. A. Masterman (Watson House) referred to a misunderstanding with regard to the heating value of the luminous as against the aerated flame. The aerated flame, he said, was certainly hotter, but the total amount of heat from the two methods of burning gas was the same. The way the fallacy often started was that where one wanted a hot flame one had the aerated flame. Mr. Masterman went on to speak in connection with the formation of carbon monoxide due to solids in the flame. The carbon monoxide did not, however, increase to anything like the extent that one might expect where a radiant was broken. Mr. Prater had also spoken of the production of carbon monoxide from lighting burners when they were turned low. The lighting burner, however, had not a high consumption, and they must take care to keep the matter in proper balance. The production of carbon monoxide in a room under such conditions was very small, and it would be a mistake to stress the point.

He supported Mr. Dunning in what the latter had said about there being no mystery in regard to carbon monoxide production; the basic principles were understood, and, being understood, he did think that that carried with it certain responsibilities on the part of designers of apparatus and on the part of gas undertakings putting them out on the district. It was not a matter of expense to get an appliance to burn with complete combustion. The factors in design were well known. It was very often the cheap appliances that were defective, but there was no reason why they should be. A cheap appliance could be quite good from the combustion point of view. They were trying to get makers of cheap appliances to understand the factors governing complete combustion. So much stress was always laid on ventilation, but the first thing was combustion—that was, to set up appliances which did not produce carbon monoxide. It was stupid to rely solely on the flue; they could ensure that appliances were correct by proper design, testing, and maintenance. On the question of the misunderstanding of carbon dioxide, it was only necessary to remind the public that it was actually administered to persons who were suffering from carbon monoxide poisoning. If one breathed very rapidly for half a minute one would find that it was impossible to breathe at all for a little while afterwards. This was because the carbon dioxide concentration in the lungs had been reduced.

Mr. H. W. Holgate (Gas Light and Coke Company) suggested that the basis of stating the carbon monoxide production favoured by the author did not take into account the fluctuation in the amount of excess air passing through the appliance.

Carbon Dioxide Not Poisonous.

Mr. F. C. Smith (Watson House) said he had been intimately associated with Mr. Dunning's work, and he was aware of the labour involved in preparing this paper. It was a fact that certain people holding responsible positions in civil life did make statements in regard to the poisonous nature of carbon dioxide, and he did suggest that it could not be too strongly emphasized that carbon dioxide—a normal product of the combustion of coal gas—was not a poisonous gas. Another popular misunderstanding was that the carbon monoxide resulting from combustion was directly proportional to the amount of carbon monoxide in the gas. He did not believe that there was any relationship between the two at all; the small amounts that were formed came from the ethylene and the methane. Mr. Dunning rightly emphasized the proper way to regard this question of incomplete combustion; it was not a matter of loss of thermal efficiency. The most important point was the amount of carbon monoxide produced and the serious effect if it was in excess. He asked what would be the effect on carbon monoxide production of luminous flames cutting one another. Did this create chilling? Mr. Smith referred to the use of a Katz Recorder, and said that this would help them considerably in the recording of carbon monoxide, and when they understood the difficulties of the apparatus they would be able to study the composition of the flue gases during the heating-up period (the period of instability) with the use of this recorder. He would like, in conclusion, to emphasize the very small amount of carbon monoxide present in well adjusted appliances. Referring to Mr. Wood's remark, he said it was a fact that the carbon monoxide content of the air from the Thames was of the order of five or six parts per million.

Mr. Hawes (Tottenham) considered that the factor of water vapour was the most important—carbon monoxide, carbon dioxide, and bacteria being relatively unimportant compared with this, so far as physical discomfort was concerned. In reference to what had been said concerning broken radiants, Mr. Hawes emphasized that the cleanliness of the burner must not be overlooked, and in this connection mentioned the Institution of Gas Engineers test for oven smothering.

The Author's Reply.

Mr. Dunning, replying to the points raised in the course of the discussion, said, in reply to the President, that the amount of carbon dioxide present in the flue gases of a geyser depended upon the gas rate and the particular geyser one was testing. Different designs had varying amounts of air flowing through them, and one would therefore get different concentrations of carbon dioxide. They wanted to get appliances with a lower carbon dioxide concentration but with the same thermal efficiency, and by that means increase the factor of safety of the appliance. He thought that the flickering of the flat flame might be due to eddies of air drawn into the radiator. He was indebted to Mr. Wood for pointing out the error in regard to the thermal loss in the coke and coal fire. In the table in question he did not set out to show the relatively higher efficiency of the gas appliances, but rather the extent of incomplete combustion due to carbon monoxide. The question of loss of heat through the escape of soot was important. It was certainly difficult to make deductions for the carbon monoxide in the air, and it was best to test in a room as free as possible from carbon monoxide.

In reply to Mr. Holgate, he said that they first obtained the carbon monoxide production figure per hour; that figure brought in the excess air, for in order to get the carbon monoxide figure they had to determine the carbon dioxide in the flue gases. If the carbon dioxide was lower then the excess air would be higher, and the carbon monoxide/carbon dioxide ratio automatically corrected for that.

Referring to Mr. Smith's question of flames cutting one another, he had done one or two experiments and had found that the amount of carbon monoxide was slightly higher, but it was not really very serious. One could definitely get slightly better combustion by correctly spacing the jets in a geyser.

He agreed with Mr. Hawes that the question of humidity of the atmosphere was very important, although he would not stress it as much as Mr. Hawes had done. There had been increases in carbon monoxide in ovens when raising the pressure after luting up the oven. By putting the pressure up to 7 in. W.G. one got visible flame smothering but no marked increase in the carbon monoxide produced. This was due particularly to the lack of flame chilling. There was no flame contact in most ovens, but some flames hit up against the grid supports of the oven, thereby increasing the carbon monoxide. If, however, there was no flame contact, said Mr. Dunning, in conclusion, one could get a definite amount of flame smothering without an increase in the carbon monoxide production.

Vote of Thanks.

Mr. J. H. Goldsmith (South Suburban), the Senior Vice-President, proposed a hearty vote of thanks to Mr. Dunning.

Mr. A. Tennant (East Surrey), the Junior Vice-President, seconding the vote, expressed the hope that the matter would be further extended to cover the effects of combustion after installation on the district.

Mr. Dunning, in acknowledging the vote of thanks, reminded them that Watson House embraced both the Research and the Training Section, where the co-operation between the laboratory and the district was effected, and by this co-operation they were doing their best to bring their research work into use on the district.

Scottish Junior Gas Associations

The Future of the Gas Industry—Distribution, Service, Salesmanship

By Ronald B. Glover, A.M.Inst.C.E., M.Inst.Gas E.

[Paper at a Joint Meeting of the Eastern and Western Districts at Glasgow on Jan. 10.]

Up to comparatively recent years the majority of the smaller undertakings operated their retort houses without scientific assistance in the form of recording and indicating instruments. The retort house was operated by the unaided intelligence of the leading stoker or foreman. The larger works have long since left this state of things behind, but there are still undertakings whose Boards or Committees do not consider it necessary to spend any suitable sum upon recording and measuring instruments. It is not reasonable to expect that a gas-works can be scientifically operated if suitable apparatus is not available to ascertain the daily and hourly conditions.

There are still many gas undertakings whose managers are not provided with the means of ascertaining with a fair degree of accuracy even the most elementary facts with regard to the operation of their plant. Contrasted with this, the engineer in charge of an electricity generating station is nearly always provided with weighing apparatus and instruments which tell him from day to day the weight of coal fed to each boiler, the weight of water evaporated per hour, the CO_2 content of his flue gases, as well as the pressure and temperature of the steam generated; and, in most cases, these instruments are fitted with recording mechanism, so that variations from hour to hour can be observed and dealt with. It is suggested that, even in quite large gas-works, the data available to the operator is much less than that which is at the disposal of the electrical engineer, and that we cannot hope to get to that last penny of low cost per therm which is so necessary in competition with our rivals unless we are equally well equipped with the means of scientific control.

Steam Admission to Retort.

Carbonizing engineers are, no doubt, fully aware of the difficulties in the way of getting the necessary information for full control of this important operation. For example, the percentage of steam used per ton of coal carbonized in a continuous vertical retort has a most important effect on the efficiency of the process. In a rough and ready way it is easy enough to supply steam to the retort until the required calorific value is attained. But it is not always recognized that it is fatally easy to overdo the supply of steam, and that such excess is not easily detected without measuring instruments and appliances. Calorific value is reduced by the addition of CO_2 as well as by that of the correct proportion of "added gas." But whereas, for instance, steaming in the correct proportion may result in the production per ton of 18,000 c.ft. of gas at 450 B.Th.U., excess steaming may result in the production of only 16,000 or 17,000 c.ft. of gas at the same calorific value.

The analysis of the gas should reveal the fault, but even that does not show the whole fault, because an undue volume of steam may be passing unconverted through the retort, coming down again as water in the condensing plant. Not only is there waste of steam, but the excess of it reduces the inside temperature of the retort, with a marked detrimental effect on the efficiency of the process. There is set up a sort of vicious circle; the excess of steam itself decreases the capacity of the retort to deal with the steam supplied to it. Furthermore, the unconverted steam increases the temperature of the gas leaving the retort, throwing more work on the condensing system and reducing the strength of the ammoniacal liquor. Some form of measuring apparatus is undoubtedly necessary here, so that the supply of steam to each retort may be adjusted to the temperatures of the setting and to the minimum required to produce the declared calorific value of gas.

No one responsible for the manufacture of gas can afford to be satisfied with anything less than the utmost that can be obtained from the coal and the plant and apparatus at his disposal. A certain minimum of information is necessary if this is to be achieved. One is conscious of asking for a lot when one suggests that every retort house should be equipped with some form of weighing apparatus for coal and coke. Surely it should be possible for the operator to know from day to day how much coal is carbonized in the retort house. The quantity of gas made per hour is generally fairly well known, but the same strict watch is not always kept over the quality. Some form of indicating and recording calorimeter is an imperative necessary in these days of calorific value standards imposed by law. Finally, it is the duty of the Works Manager to produce the cheapest possible gas of constant quality and specific gravity, and to send it out under an adequate and regular pressure.

Effective Salesmanship.

These remarks lead up to the statement that we cannot afford to sit and wait for business to arrive on our doorstep, but must go out knowing what we intend to advise, being convinced in our own minds, and with the necessary data to convince our clients. Let us, therefore, examine our own particular industry, and study how we, as individuals, can assist in its further development, particularly in the direction of more effective salesmanship. It will not be out of place at this juncture to remind ourselves to what an important industry we belong by quoting the following statements:

(*a*) The gas industry in Great Britain used during the year 1929, 18,334,000 tons of coal and made over 320,000 million c.ft. of gas.
(*b*) The total number of gas meters in the country is 9,376,276, and it is estimated that the number of persons using gas is 36 millions.
(*c*) The capital invested in the gas supply industry is over £200,000,000.
(*d*) The number of men engaged is some 113,000, a large number of whom participate in schemes of co-partnership, their holdings exceeding £2,000,000.
(*e*) The annual wage roll is over £15,000,000.
(*f*) The gas industry is the chief conservator of the coal supplies of the country, inasmuch as it applies the latent heat in the coal to practical purposes with greater efficiency than any other industry.

It is interesting to note that the Gas Light and Coke Company sold last year 49,554 million c.ft. of gas at a declared calorific value of 500 B.Th.U. If this be converted to equivalent electrical units at the accepted rate of 3412 B.Th.U. per electrical Board of Trade unit, we have:

$$\frac{49,554,000,000 \times 500}{3412} = 7,300,000,000 \text{ units.}$$

Now the total annual output of the electrical undertakings of Great Britain is 8800 million units, according to the latest figures available, so that this one great gas undertaking supplies over 80 p.ct. as much energy to the consumer as the whole of the electrical undertakings in Great Britain. Nor is there any reason why this position should be altered even if the consumption of electricity per head increases to a figure far in excess of that prevailing at the present time.

Mr. H. D. Madden said: "If the United States of America, which is the stronghold of electricity supply, and where the consumption of electricity is three to four times greater per capita than in England, can lead the way in gas output, it is evident that there is, in this country, a large field for development."

That there is indeed room for development was urged in a striking letter to the Editor of the "Financial Review of Reviews," written, I believe, by an engineer of unquestioned authority, and from which the following passages are quoted: "At the moment gas is on the threshold of even greater developments, particularly in the industrial sphere. The demand for cheap fuel for industry was never more insistent than it is to-day, and already for a large number of industrial purposes, gas is used to the exclusion of other forms of heat. . . . With the prospect of new legislation now held out . . . the possibilities are immense. The industry during a century of experience has always been able to adapt itself without difficulty to changing conditions and requirements, and there can be no doubt that it will not fail to take advantage to the full of the further opportunities of development about to present themselves."

What, then, is to be our mode of procedure? With a view to leading up to this point we may take a quotation from a speech of Alderman West, in which he referred to the opinion expressed by Mr. L. R. Grant, General Manager to the Primitiva Gas Company in Buenos Aires, on an occasion when I had the pleasure of being present. Mr. Grant confirmed these remarks later in a written communication:

> "American Gas Companies contend that development in the Gas Industry is entirely governed by a judicious selection of commercial men capable of developing a 'selling force.' I cannot lay too much stress on the

excellent way in which the U.S.A. gas undertakings plan their selling campaigns. A close study is made of existing competition, and a series of probable objections is carefully analyzed with a view to finding suitable arguments in favour of gas. Salesmen in U.S.A. are divided into two categories. The first one deals with ordinary or well-known uses of gas, the second category deals entirely with new uses and new industries. Co-operation between the two categories has been established in no uncertain manner, and it is safe to say that every possibility afforded for the use of gas is most carefully exploited."

Mr. Grant expressed his sincere admiration for English practice, and finds that the gas business here is a great and growing one. As pointed out by Mr. Madden, although gas and electricity came into use in America more or less at the same time, yet the consumption per capita in several big American cities is greater than that of similar cities in this country. This fact very strongly suggests that with the aid of carefully organized salesmanship the gas sales in our own country can be very materially increased.

Problems of the Small Undertakings.

My further remarks are intended in the main for those who hold responsible positions in the smaller undertakings. It is difficult to generalize. Each undertaking must consider its own special conditions. The problem is essentially different from that of the larger undertakings in which there is generally a special outside department managed by a superintendent or similar official, who is directly responsible to the management, whereas in the majority of undertakings in Scotland the Engineer and Manager is his own outdoor superintendent and chief salesman.

The initial stage in a campaign for increased sales generally invôlves a house-to-house survey, but it is strongly advised that this should be preceded by careful attention to the efficiency of the supply to the district.

The law requires that the minimum pressure at the consumer's meter must be 2-in. water gauge, and whereas the mains may be capable of satisfactorily carrying the present load, it is most important to consider whether they can carry a marked increase in consumption if this should be the result of the canvass. Street plans must be examined, pressures must be taken, preferably on recording gauges, at important points, particularly at the street ends where the main has no interconnection with another feed to ascertain whether the district can stand an increased load. If this proves to be doubtful, then the policy of feeder mains at certain points or the possibility of duplication of certain sections must be examined, and costs of such work prepared and considered in conjunction with future prospective sales. In instances where no intensive canvass has been previously attempted it is suggested that the first district to be tackled should be one where a good gas supply is already available, thereby obtaining increased gas sales without increased capital expenditure on mains. It is frequently found that, with adequate attention to joints and gas-tightness generally, a system of mains will stand a little higher pressure, and that by this means additional loads can be carried successfully.

Having definitely ascertained that the district is well supplied, the house-to-house canvass may be undertaken. The actual person who will do this work largely depends upon the size of the undertaking. In the smaller districts it will be the manager himself, whereas in other cases it may be a specially-trained man employed for a short period. It is suggested that whenever possible he should be a regular employee, and benefits will accrue, in some instances, if he is a townsman, since he may better understand the idiosyncrasies of his fellow townsmen or townswomen.

First and foremost the canvasser must make himself familiar with the cost of operation of the standard pieces of apparatus such as wash-coppers, cookers, fires, and small water heaters, and (when dealing with houses of the larger size) "Sunhot" and similar types of hot-water supply units, together with "Electrolux" gas-operated refrigerators.

In this country, where the local plumber has in many cases been a supplier of gas apparatus, records showing what gas appliances are installed in individual houses are not generally available. It is suggested that, whenever it is found possible, records should be kept so that at some future date a re-canvass may be made of those householders who did not think fit to install apparatus in the first instance. The ideal, no doubt, is a card index, a card being reserved for each house and (when completed) showing what apparatus is installed; the card, of course, being kept up-to-date whether by additions or removals.

In the absence of any record, the canvasser must go about his job with a considerable amount of tact, and it is suggested that a combination of maintenance man and canvasser may, in some cases (especially among the artisan class) more readily secure results. A little attention to the kitchen fight, a new mantle supplied at cost price, the adjustment and cleaning of a small griller with the supply of new grill frets, may so please the housewife that she will more readily listen to the advantages of a gas copper with its 45 c.ft. per hour consumption.

The installation of a "Newbridge" gas switch, either at a fixed price of (say) 10s. for switch and fixing or, alternatively, at 2s. 9d. per quarter for four quarters, has, in conjunction with a clean burner and a new mantle at cost price, re-created an interest in gas which had been gradually failing when neighbours or friends from other districts had talked of the great saving and convenience electric light gave, owing to the ability to switch out when leaving the room.

One of my friends, who is the Managing Director of a 40-million works in the Midlands, writing to me on the subject of salesmanship, states:

> "A scheme which I have adopted for canvassing for new business may be interesting. It is difficult for an official canvasser to get a heart-to-heart talk with gas consumers generally, and a small undertaking cannot afford to keep a highly paid official for this work only. I have got over the trouble by making every man on the district a canvasser also. Fitters, improvers, meter inspectors, and maintenance men go into a number of houses every day and have a chance of talking to consumers and seeing what apparatus they have in their houses. They recommend cookers, fires, fittings, or water heaters, as the case may be, and are paid a bonus on all the new business they get; and it makes them very keen, with the result that they have, as a rule, a nice bit to pick up every quarter. If they 'break the ice' and then report what has been done and what the customer is interested in, and leave the showroom to finish the business, they get half bonus; but they are encouraged to finish the business themselves, and even to meet the customers at the showroom by appointment.
>
> "I find the idea works well and can recommend it to small undertakings, but objections may be advanced where larger undertakings are concerned, though even with a large undertaking the idea may be adopted in a modified form."

Discussion.

Mr. D. Melvin, President of the Western District, said there could be no question that some gas companies and many local authorities had not yet realized their potentialities, and seemed quite content to go jogging along provided they were holding their own. This was frequently shown in their lack of encouragement to their staffs, and the lack of inducement offered to attract competent men to the industry. The efforts of the electrical people to secure business were undoubtedly prompting the gas industry to sit up and take notice. The electrical people had a great advantage in that electricity had been dubbed "fashionable." To fight fashion required a stiff struggle. He was interested in the scheme quoted by Mr. Glover, in which the outside men were paid a bonus on all orders booked, but wondered if this should be restricted to outside men only. Could not the works man participate in some way, as all employees should work together, each in their respective spheres, and if mutual benefit resulted it should be recognized and rewarded.

Mr. D. Yule (Alloa), referring to the use of instruments in gas-works, said recording instruments were a serious item of cost, and many small gas undertakings could not afford to install them and at the same time employ a man specially to look after them. That was where the larger undertakings had the advantage. He called attention to misleading statements which had appeared in sections of the Press concerning the race between electricity and gas, and quoted numerous instances to show that gas was not only subsisting on its own merits, but had not begged or accepted Government aid.

Mr. R. Keillor (Greenock) said he was convinced that future demonstrators in the gas industry would be salesmen, while production would be organized to suit the numerous markets. He took as an example the increasing popularity of the gas oven as a result of fitting it with a thermostatic control. In America, time switches had been put on so that the cooker did its work with little or no attention. The gas industry had been developed on bad precedent. Salesmanship was the centre around which future development must revolve.

Mr. A. Macfarlane (Glasgow) pointed out that gas undertakings in Scotland were mostly municipal, and in consequence co-partnership was hardly possible on any large scale. He agreed, however, that the bonus idea was what was wanted for everyone employed in a gas undertaking. He regretted that there were not at Glasgow any really practical gas supply classes, and he thought this was a matter which the body representing the Technical College should look into.

Mr. S. McGowan (Glasgow) asked how a gas salesman was to be trained, and thought it was essential that he should have some works training. Too much could be made of this matter of salesmanship. What they were most concerned with was how to reduce the price of gas, and it appeared to him that the time had arrived when they should be getting away from retort practice to the producer, and thereby get more therms.

Gas was more valuable than the bye-products, and he asked Mr. Glover for his opinion on the future development of the manufacturing side of the gas industry.

Mr. J. Frazer (Glasgow) said he thought it was advisable to have a governor fixed on each meter, as it would enable them to meet the demands of customers by increasing the pressure. He believed they should always have plenty of pressure on tap. He asked where instruments should be fixed where there were two or more benches of retorts at work.

Mr. Glover, in reply, said his hearers had probably more experience of the salesmanship side of gas than he had, but the general opinion was that the attention given to salesmen in Great Britain was not anything like that in North America and Germany. Far too many had not sufficient knowledge of details. With regard to co-partnership, he realized that most of the big Scottish undertakings were municipally owned, and the figures he had given referred to the holdings of employees in the whole industry.

In the commercial control of carbonizing plant there was still much that could be done towards reducing the cost of production. Wherever it was possible, it was certainly advisable to have a chemist working in conjunction with the carbonizing plant. Works of only 20 million c.ft. per annum could not afford this, but for 50 million c.ft. and upwards an assistant would seem necessary, and when installations producing a million c.ft. per day were considered, one or more assistants were absolutely necessary. There were points in favour of complete gasification of coal, but the whole point was that, while they could produce low calorific gas at lower prices per therm, the question of distribution had to be considered and capital cost was materially increased.

London Juniors' Annual Dinner

A large number of ladies and many distinguished guests in the Gas Industry marked the occasion of the Eighteenth Annual Dinner and Concert, held on Friday, Feb. 6, at the Holborn Restaurant, W.C., under the Presidency of Mr. T. H. Prater, of Margate. The President and Mrs. Prater welcomed the members and visitors on their arrival.

Among those present as guests of the Association were Mr. John Terrace, a Past-President of the Institution of Gas Engineers; Mr. Thomas Hardie, Chief Engineer to the Gas Light and Coke Company; Mr. E. V. Evans, Joint Manager of the South Metropolitan Gas Company; Mr. H. C. Smith, Engineer to the Tottenham and District Gas Company; and Mr. J. R. W. Alexander, Secretary of the Institution of Gas Engineers.

Apologies of absence were read by the President from Mr. J. M. Campbell, of Margate, Mr. Harold E. Copp, President of the Institution of Gas Engineers, and others. The latter, in the course of a message wishing success to the London Association, wrote as follows:

I much regret that owing to a long-standing engagement in Hull to-night, I am unable to be with you. You will be no less ready to extend to me your forbearance in the knowledge that the date of your meeting coincides with that of the Annual Dinner and Dance of the British Gas Light Company's Recreation Clubs.

I am always rather diffident in addressing a Junior Association, as I feel that my audience is a most critical one; it is easy to criticize, but more difficult to construct. It must be borne in mind, however, that the juniors will soon have to bear our responsibilities, and it is upon their shoulders that the future well-being of the Gas Industry will rest. Please, therefore, do not look upon the Education Scheme of the Institution of Gas Engineers as an imposition, but rather as a privilege, and as a means of eliminating those who certainly will not be fully equipped to bear their share of the responsibilities of the future.

It is my earnest desire, as President of the Institution of Gas Engineers, that some of the arduous work of the technical committees should be performed by the younger men, who, in the natural course of events, have more time at their disposal than those whose responsibilities are so great. We must be assured that such work is only entrusted to young men who have proved their fitness to undertake it. It is up to them to come forward with constructive proposals and so serve its best interests, and, incidentally, their own as well. As our young men have, in the past, always risen to the occasion, I am sure they will so rise in the future.

The Loyal Toast having been honoured at the call of the President,

Mr. Thomas Hardie rose to propose the toast of "The Association and President," in the course of which he said that he always followed the doings of the London Juniors with the greatest interest, particularly this year on account of the very thoughtful address of their President. He had covered a wide field, and pointed out ways in which it was possible to keep oneself abreast of the times, and he (the President) was an excellent example of the advantages of keeping closely in touch with what was taking place elsewhere. It gave evidence of that initiative and progress that was so essential to success. He had been pleased to see that they had in their programme a large number of visits to various works—not only gas-works but also those of manufacturers of materials and plant which they used on gas-works—which were very valuable to them. It would be very difficult to measure the value of the Junior Associations to the Industry, but they undoubtedly had a great educational value, not only to the members themselves, but also to the undertakings from which those members came. For the Seniors were tending to retire more and more from the practical side to take over administrative work, thus leaving the practical side in the hands of the Juniors. Another advantage of the Junior Associations was that they were able to draw their membership from specialists, for in nearly all cases Juniors were specialists in some sphere or another, and for this reason they were fortunate in their discussions in hearing from those who were really in touch with what they were talking about. The papers they had heard and the visits they had made had given them a good idea of the progress being made in the manufacture and supply of gas.

In all departments of the Industry, continued Mr. Hardie, steady progress had been made. It was sometimes suggested that too much attention was being given to the manufacturing side of the business and not enough to salesmanship. But it this was so in some parts of the country it was not the case in London. In London the salesmanship side had its place alongside manufacture. But it was impossible to give too much attention to manufacture. Mr. Hardie went on to refer to the activities of the Minister of Transport in regard to the boosting of electricity; but, he said, the Gas Industry were well satisfied with the progress they were making.

The President, in acknowledging the toast, said that a few words on the progress of the Association would not be out of place. They now had the excellent membership of 423. It would be remembered that four years ago a move was made to make entrance to the Association more difficult. But in spite of this they had had 56 new members this session, of which ten had a B.Sc. degree or some similar qualification. This Association had always been indebted to various undertakings in their area—which extended over 1000 square miles—for the facilities provided for visiting their works, and for allowing members of their staffs to contribute papers. All the gas undertakings and firms were ready to give them information. Mr. Prater said he felt some comment should be made upon the future of the industry. The Juniors, as Mr. Hardie had said, were coming more and more into their own, and it was on them that much of the detail work finally rested. It was for them to see that they carried out this trust satisfactorily, and they could only do this by a course of study and attendance at their meetings and lectures.

Referring to what had been said in regard to the salesmen's side, Mr. Prater said that the Industry was very proud that one of their big personalities on the sales side should be Sir Francis Goodenough. The importance of salesmanship was widely appreciated, and it would not be long before the courses of tuition would be started, and it was to be hoped that they would be something along the same lines as those on engineering and supply. In regard to electricity, Mr. Prater considered that this had been a good friend to the Gas Industry. It had given them a good shock and made them wake up to the position in which they really were. Electricity schemes had had Government support, and now appeared also to have a Government salesman. To combat this it was very necessary that the Gas Industry should develop active sales propaganda.

The Toast of "The Visitors" was proposed by Mr. L. Lacey.

Mr. H. C. Smith (who is this year's President of the Southern Association of Gas Engineers and Managers) replied on behalf of the visitors. The relations between the Senior and the Junior Associations, he said, had always been very cordial; they in the Senior Association were only too happy at any time to do what they could to assist the Juniors, and they did at the same time appreciate very much the help the Juniors gave them, both in their Association and in their individual capacity.

In regard to the Government boosting of electricity, Mr. Smith said that he had had the pleasure recently of attending the meeting at the Guildhall, and had they too been there they would have realized that whatever were Mr. Morrison's capabilities as a Cabinet Minister, there was no doubt as to his capabilities as an electrical salesman. When the Minister of Transport lost his job, said Mr. Smith, he was sure he could get another in any electrical showroom in the country. If he had attended a gas meeting and had heard such pessimism as was evidenced at that electrical meeting he would be very sorry for the Gas Industry. The Minister of Transport was urging electrical undertakings to put their mains everywhere and anywhere, together with appliances; the cost did not matter. That was the sort of line he was taking. The Gas Industry was presumed by the Minister of Transport to be a dying industry. He could not imagine them having a "Minister of Gas" to urge them to put out gas cookers on the district and give consumers that service which it was their statutory obligation to give.

During the evening a concert was given by Murray Ashford's Entertainers.

The Gas Light and Coke Company

ORDINARY GENERAL MEETING

The Two Hundred and Twenty-Fourth Ordinary General Meeting of the Proprietors was held at the Chief Office of the Company, Horseferry Road, Westminster, on Feb. 6—Sir David Milne-Watson, LL.D., D.L. (the Governor of the Company), presiding.

The Secretary (Mr. W. L. Galbraith) read the notice convening the meeting; and the report and accounts were taken as read.

The corporate seal of the Company was thereafter affixed to the register of holders of capital stocks.

The Governor: Ladies and Gentlemen,—I propose first to deal with the capital account. We have expended during the year £34,000 on lands; £255,000 on buildings and machinery; £465,000 on mains and service pipes; £82,000 on meters; £149,000 on stoves, altogether a total of £1,005,000. We have depreciated our ships and stoves by £117,000, making a net increase in the capital of £888,000.

Expenditure this year has been exceptionally heavy, partially due to the large number of mains which have had to be laid in the areas of the Companies we have taken over in recent years—Brentford, Grays, and Pinner—and also to the work we have done at the request of the Government in respect of gasholders, mains, and other plant. I will refer to these later on in my speech.

An Exceptionally Mild Year.

Turning to the revenue account, you will have seen from the report that we have experienced a decrease in business of 2½ p.ct. During the second half of the year the increase in our business was normal, but it was not sufficient to make up for the decrease in the sales of gas during the first part of the year when we experienced exceptionally mild weather. In the year 1929 we had an abnormal increase in the first six months of over 8 p.ct. owing to the severe climatic conditions then prevailing, and, therefore, it was only to be expected that with a mild winter in the following year there would be a falling off in gas sales. There is no reason whatever, therefore, for anxiety with regard to the Company's position as to gas sales. You will notice that during the year we had an addition of no less than 25,000 consumers and sent out 90,000 additional gas appliances—fires, cookers, &c.—which have either been sold or let out on hire. This is eminently satisfactory, and in due course we shall reap the reward. The decrease in gas sales cost the Company £180,000.

Dealing with the revenue account in detail, the cost of coal was more by £75,000, which was due chiefly to the fact that the percentage of coal gas made was larger than in the corresponding period. This led, of course, to a reduction in the proportion of water gas made, and, as you will see, there was a saving of £52,000 on oil.

Service to the Consumer.

The large figure spent on repairs and maintenance of mains and service pipes, repair and renewal of meters and stoves is an indication that the Company is pursuing its established policy of giving satisfaction to its consumers. Rentals of meters and stoves show a satisfactory increase. With regard to residuals, coke and breeze show an improved position, having brought in over £100,000 more than in the previous year. Tar and its products were not so satisfactory, and the revenue from these bye-products shows a reduction; this is a matter, however, which we hope may be remedied in future years. The one feature in the revenue account which is thoroughly unsatisfactory is sulphate of ammonia, on which in 1929 we made a profit of £77,000 and last year a loss of £16,000. For this unpleasant result the Company is in no way responsible. We as a Company are specially handicapped by the long carriage of a large proportion of our ammoniacal liquor from our western gas stations to our products works, which are situated in the East End.

Unsatisfactory Sulphate Market.

The unsatisfactory market position has been brought about by the large quantity of nitrogen which is now being extracted from the air by synthetic plants not only in Great Britain, but also in Germany, France, Italy, the United States, Japan, and elsewhere. There is no prospect, I am sorry to say, of the situation improving, inasmuch as it is the policy of the countries I have mentioned to possess their own nitrogen plants, not only for the purpose of producing the fertilizers they require for their own use, but also as a home source of nitrogen in the event of war. We received about £12 a ton for sulphate before the war, and to-day we obtain less than £5 per ton. I should like to explain that we cannot avoid the manufacture of sulphate of ammonia, as we are not allowed to run the ammoniacal liquor into the sewers, and, therefore, we are compelled to work it up into sulphate of ammonia. We are doing all we can to find means to remedy the position, and research is taking place all the time to see whether any other use for ammoniacal liquor can be discovered, but so far it has not been successful—I mean on the large scale.

Result of the Year's Working.

The result of the working for the year is as follows: The balance transferred from the revenue account to the profit and loss account was £1,810,000, as against £1,883,000 for the previous year. This balance, after allowing for interest on borrowed money for the year and the dividends distributed in respect of the June half-year, leaves a sum of £804,000 from which to pay dividends for the December half-year.

This sum enables the Directors to declare the usual dividends on the 4 p.ct. consolidated preference stock and the 3½ p.ct. maximum stock, and a dividend at the rate of £5 12s. p.ct. per annum on the ordinary stock. These dividends, together with the necessary contribution of £20,000 to the redemption fund, will absorb £682,000, leaving £122,000 to be carried forward to the credit of the current year's account, as against £160,000 carried forward on the last occasion.

The Lord Mayor at Bow Common.

With regard to the Company's works, everything is being done to keep them thoroughly up-to-date. At Bow Common the works have been reconstructed, and in June the Lord Mayor of London, Sir William Waterlow, with the Lady Mayoress and Sheriffs did us the honour of opening them officially. Work is progressing on a large installation of coke ovens at Beckton; a reconstructed retort house has been completed at Fulham and another at Nine Elms; and at Brentford and Southall the work on vertical retorts and other plant is nearing completion.

New Showrooms.

New showrooms have been opened at Barking Road, and others are in course of erection at Woodford, Harrow, Hackney, and Acton, and we have acquired sites at Billericay, Rayleigh, and Wickford for further showrooms.

The Grays and Pinner Gas Companies were taken over, as you know, at the beginning of last year, and the re-organization of these new districts is nearing completion. In the long run there is no doubt whatever that they will prove of great value to the Company.

New Gasholders.

New gasholders have been erected at Southall and Richmond, and others are in course of erection at Beckton, Battersea, Kensal Green, and Harrow. Considerable discussion arose as to the Harrow gasholder, and strong local opposition was encountered on the score that it would spoil the view from the top of Harrow Hill. After prolonged negotiation, the Company offered to stop construction at a height of 180 ft., just below the sky line, and then, if the Harrow inhabitants still objected to the holder, to put up a small supplementary holder, the extra expense to be met by an increase in the price of gas in the area of the late Harrow Gas Company. The Harrow Urban District Council, however, after discussing the matter dropped their opposition on the understanding that they are to be notified when we reach 180 ft., and that they should be allowed to have a say with regard to the painting of the holder.

Expediting Constructional Work.

You may remember that, in the summer of 1929, we were approached by the Government and asked whether in anticipation we would put certain constructional work in hand at an earlier date than we otherwise would, on the understanding that the interest on the money so expended would be found for us for a period of years. We agreed to do this, and accordingly we are in the process of expending some £500,000 or £600,000 on gasholders, mains, and plant, which will, of course, be ultimately needed. The work is proceeding rapidly, some of it having been already completed, and the expenditure for the year is included in the capital expenditure already referred to; and that is one of the reasons why the capital expenditure this year is so high.

From what I have told you, you will realize that during the past year we have not been idle, but have been pressing forward with work for the ultimate benefit of the Company. In this connection we are actively continuing our research work, without which little real progress can be made in this or any other industry.

Low-Temperature Carbonization.

The low-temperature plant at Richmond has been worked during the year, and we have come to an arrangement with the Government Department concerned to carry on work there for another year. "Gloco," the smokeless fuel produced, has been generally considered satisfactory. Unfortunately, however, the process has not been a commercial success. The tar produced has been found unsuitable for road work and is only at present saleable for fuel. Research is being actively carried on, however, in the hope of finding some better use for this product.

I am glad to say that the majority of the claims in the Holborn explosion have now been settled. You will see that an additional £31,000 has been charged to the special purposes fund under that heading. We, as a Company, have paid out £66,000 altogether, and there are now very few claims outstanding.

The Coal Mines Bill has now become an Act, but it is per-

haps too early to say what its effect will be so far as the Gas Industry is concerned.

Further Amalgamations Proposed.

The Company is promoting a Bill in Parliament to provide for the transfer to this Company of the undertakings of the Southend-on-Sea and the Brentwood, Gas Companies, and for such other purposes as will be explained to you at the Extraordinary General Meeting to follow at the close of this meeting.

During the autumn we made an issue of £2,500,000 4½ p.ct. redeemable debenture stock, which was applied for no less than 26 times over. It is very gratifying to find that the public hold gas stocks in such high repute.

So much for the history of the Company's activities during the past year.

A Protest Against Ministerial Propaganda.

I should like now to draw your attention for a few minutes to a subject on which we, in common with others engaged in the Gas industry, feel very strongly—namely, the boosting that is being given to electricity by the Government and by many local authorities. In doing this, I am not complaining particularly of this Government, as we experienced the same thing under the previous Government, and I myself entered a vigorous protest against that action at the time; apparently it is becoming the common practice in Government circles, whatever their complexion. Recently we had the spectacle of the Minister of Transport, whose Department is in charge of electricity, holding meetings in the Cities of London, Manchester, Leeds, and Glasgow, generally under the ægis of the Lord Mayor or Lord Provost, of the City, and I wish, on behalf of this Company and the Industry generally, emphatically to protest against his action. [Applause.] It seems to me grossly unfair that a Minister of the Crown, whose duty surely it is to be impartial, should so far forget his public position as to come forward as special pleader for a particular industry, and not only recommend the use of electricity in general terms, but advocate the installation in particular of electric fires and cookers for domestic use. We may ask ourselves how a Minister of the Crown thinks that he is benefiting the country by advocating the displacement of gas fires and cookers by electric fires and cookers. It is grossly unfair, and I was glad to see that one of our Co-partners loyally took his courage in both hands and went to the meeting at the Guildhall and protested as a gasworker against this injustice. [Applause.] What advantage is it to the unemployed of the country if a gasworker is put out of employment in order that an electrician may be found work?

Strange Ideas of "Fair Play."

It will be a bad day for Governments and for industry if this precedent is followed, and if Ministers of the Crown are engaged in boosting and advertising particular trade interests to the detriment of others. What would be said if the President of the Board of Trade were to stump the country in support of gas at the expense of electricity, or in favour of motors as against railways? And yet this is what is actually being done with regard to electricity, and what we in the Gas Industry are apparently expected to put up with in silence. Not long ago the Minister of Transport, in speaking at a public meeting, called attention to the way the Gas Industry fought, and apparently he thought he was making the *amende honorable* in so doing, very much as if a warrior after beating down an opponent by unfair means called upon his followers to admire the fortitude and fighting qualities of the man he was trying to destroy. No; these testimonies as to our fortitude and courage in being prepared to perish in the last ditch are not our idea of fair play. The unfortunate part of it is that the injustice does not end there, as the example set by a Minister of the Crown is followed by local authorities owning electricity undertakings where, taking heart no doubt from the lead given them, they do everything in their power to prevent the tenants of their housing estates from using gas. In order to show that this boosting is not taken seriously merely by us, I should like to quote a paragraph from an electrical paper which has come into my hands this morning:

> "The main thing is that electricity is having the time of its life from a propaganda point of view, the electric supply industry is being helped and fostered and prospered by Press and Government as it was never helped before."

That shows what the electricians think of the assistance they are getting from this boosting that is going on by a Minister of the Crown, and others. To let you see what actually is being done, I will quote a few examples.

Municipal Coercion.

1.—A corporation in the Eastern Counties recently laid it down as a condition before permitting the gas company to supply a large housing estate that gas should not be used for lighting or fires.

2.—The occupiers of 27 out of 28 council houses in one case, and of 67 out of 70 in another case, asked to be allowed to use gas for illumination or heating, and in each case the local authority refused to comply with their request.

3.—The following letter was recently addressed to the tenants of council houses by the clerk of a corporation in the North of England:

> "It has been brought to the notice of the corporation that the gas company have been canvassing tenants of the corporation houses with a view to having gas installed.
>
> "I am, therefore, instructed to inform you that, by the terms of your tenancy, you are not entitled to agree to the gas company installing gas in your premises, without the previous consent, in writing, of your landlord, the corporation.
>
> "In no circumstances, therefore, must you permit gas to be installed in your premises. If this is done, it will be regarded as a breach of the conditions of your tenancy, and the council will be compelled to serve notice to quit and take steps to obtain possession of your house."

4.—In a part of our own district, the local council concerned, who are the landlords, went so far as to ensure that the gas pipes which had been installed in the houses should not be used for a gas supply for any purpose by taking the extreme step of filling these pipes with liquid cement. [Laughter.]

Is this a Free Country?

We rub our eyes and wonder if we really live in a free country. This conduct is all so un-British. It is a breach of two principles to which we have laid claim with pride in this country—first, liberty of the subject, and, second, unbiassed administration of their districts by the local authorities—and strong steps ought to be taken to prevent its continuation. If a private landlord of a house were to attempt to act in such a way, he would be considered a tyrant. Why, therefore, is such action condoned when done by a municipality which should show an example of fairness to all the traders in the town? On the other hand, when one reads of all this activity on the part of this particular Minister, one begins to wonder whether an element of doubt is creeping into the minds of those responsible as to whether the electricity scheme is going to be the financial success promised. ["Hear, hear."] Will the Government be called upon ultimately to implement the guarantee they have given? Might not this account for some of the desperate remedies adopted and for the abnormal activity of the Minister of Transport at the present time?

Obsolete Statutory Fetters.

There is another matter on which I desire to say a few words—namely, the dilatoriness of Government Departments in dealing with new legislation urgently required by statutory industries. We in the Gas Industry, as everyone knows, carry on our business under certain general Acts of Parliament. These general Acts of Parliament can really be regarded as the Minutes of a superior Board of Directors. The principal provisions under which we work date as far back as 1847, when gas was a monopoly. To-day, as you are all aware, it is not a monopoly. It is face to face with acute competition, not only from electricity, but also from oil, and yet we are still fettered in many respects by the operation of out-of-date Acts of Parliament. It is true that Parliament gave us some relief in 1920 and again in 1929, but delay after delay is encountered when we endeavour to get the industry put upon a proper basis. The Government National Fuel and Power Committee recommended in 1928 that certain alterations should be made in the general law governing gas undertakings, and this was recommended even more strongly by the Government Area Gas Supply Committee which reported last year. For some time we have been agitating to obtain amending legislation to give us the freedom already accorded to our electrical rivals, but so far all we know is that a Committee is being established to consider the matter. We are thankful, however, for small mercies, and I would, therefore, urge that the Committee should get to work at the earliest possible date, and that legislation should immediately follow.

Disheartening Delays.

These delays are most disheartening and very serious for the Industry. A year is a long time in our history, industrially and commercially, although it may not seem so to the politician. When it is unanimously admitted that there are grievances which ought to be put right, what would be thought of a Board of Directors who postponed carrying out reforms for two or three years because they would not give the time for their discussion? If Parliament assumes the rôle of a Directorate and takes upon itself the control of an industry, the least it can do is to give sufficient time to attend to that control, and if things are wrong put them right forthwith. I am not complaining of any particular Department, but I am complaining of the attitude Governments adopt towards statutory industries which in effect they control—namely, one of neglect to pass necessary amending legislation. It is the fashion to-day to say that more industries should be controlled, and my reply is that until we see that control is not another word for delay, the country should be most reluctant to allow any other industries to be put under Government control. ["Hear, hear."]

I think I would be lacking in my duty on this occasion if I did not refer to the serious position in which this country finds itself to-day. It used to be the accepted maxim that one should live within one's income—and I for one believe that this simple maxim is as true to-day as it was in the past. It is important to my mind for an individual and for a trading concern, but even more important for a Government, whose expenditure for the most part is unproductive.

Fundamental Economics.

This fundamental principle of economics is easily understood by everyone, but is being lost sight of at the present time, and the public mind confused by the different and contradictory theories put forward by financial experts.

Theories with regard to the influence of the gold standard, overproduction, and lack of purchasing power are no doubt important

subjects for discussion in the present serious industrial condition of this country. We may, however, have to wait a long time for a solution of these questions. In the meantime, what can we do to help ourselves? The principal thing is to give up extravagance, and not pursue a policy of spending what we cannot afford. This is a thing that is within our own power and can be put in hand immediately while we are waiting for these world problems of over-production, distribution of gold, &c., to be discussed and, if possible, settled by the experts. There was a time, not so long ago, when taxation was considered as only to be resorted to with reluctance, but now no further excuse for taxation is considered necessary than that the object is desirable, whether the country is in the position to afford it or not. Until the country comes to its senses on this subject, to my mind there is no hope for a general improvement in conditions. [" Hear, hear."]

The Company's Foundations Sound.

Coming back to our Company, I may say that I consider our business sound to the core, and provided the dice are not loaded against us with regard to boosting electricity and that the price of coal is not unduly increased by Government intervention, the prospects of the Company are excellent.

Before I close I should like to pay tribute to the good work done during the past year by all ranks in the Company. We have an excellent General Manager in Mr. Foot, and a most capable Chief Engineer in Mr. Hardie. Our Controller of Gas Sales, who is so well known for the good work he has done for the Gas Industry, was appointed Chairman of the Government Committee on Education for Salesmanship and was recently knighted by His Majesty the King. I am sure you will wish to join with me in heartily congratulating Sir Francis Goodenough on this honour. [" Hear, hear."]

Benefits of Co-Partnership.

Our co-partnership scheme attained its majority last year, as on July 1 it reached its twenty-first year of existence. Since the inception of the scheme there has been a steady growth of the co-operative spirit in the Company with an increased realization by the co-partners of the value of the common good. I feel certain in my mind that this co-operative spirit has contributed very largely to the success the Company has achieved, and I should like to say how gratified I am when, from time to time, I get unsolicited testimony from gas consumers saying how considerate, attentive, and anxious to please our staff is. This, I think, is the best test of the working of the co-partnership ideal in the Company.

It is, indeed, no longer a question of taking things easily and waiting for business to come. It is a struggle all the time. For that purpose we are continuing to train our staff at Watson House and elsewhere for the strenuous fight that lies before us. I can assure you that no effort will be spared to see that the Company's work is well done and that the consumer is given complete satisfaction.

Adoption of Report and Accounts.

I have pleasure in moving:

> That this meeting do agree with and confirm the Report of the Directors and the Auditors' Report and Statement of the Accounts of the Company for the year ending on Dec. 31, 1930.

But before putting the resolution to the meeting, I shall be happy to hear any remarks which proprietors may wish to make, and to answer any questions.

The Deputy-Governor (Mr. Henry Woodall, M.Inst.C.E.): I have much pleasure in seconding the adoption of the report and accounts.

After a few questions had been asked and answered, the resolution was put to the meeting, and carried unanimously.

The Dividends.

The Secretary then read the minute of the Court of Directors relating to dividends; and on the proposition of the Governor, seconded by the Deputy-Governor, the following dividends were declared:

Class of Stock.	Rate P.Ct. per Annum. £ s. d.
Ordinary	5 12 0
4 p.ct. consolidated preference	4 0 0
3½ p ct. maximum	3 10 0

Subject to deduction of income-tax at 4s. 6d. in the pound, and payable on March 2.

On the motion of the Governor, seconded by Mr. R. M. Holland-Martin, C.B., the retiring Directors (Mr. Henry Woodall and Sir Reginald J. Neville Neville, Bart.) were re-elected; and thereafter the Auditors (Messrs. J. A. Stoneham and P. H. Ashworth) were also re-elected.

EXTRAORDINARY GENERAL MEETING.

The Governor: That concludes the business of the Ordinary Meeting, and I will now ask the Secretary to read the notice convening the Extraordinary Meeting to approve the Company's Parliamentary Bill.

The Secretary read the notice, and thereafter the heads of the proposed Bill.

Southend and Brentwood Districts.

The Governor: As you have just heard, the main object of this Bill is to take over the Southend-on-Sea and District Gas Company and the Brentwood Gas Company. Both the Southend and Brentwood Districts adjoin the Grays area, which we acquired at the beginning of last year, and, in considering schemes for the development of that area, we found that it would be to the advantage of our own Company, as well as to the advantage of the two Companies mentioned, if the districts now served by them could be brought under one control. The new areas are promising and capable of satisfactory development.

The Bill also proposes to give the Company power to invest a certain amount of money in concerns which are closely allied to our business. It is very desirable in these days that we should have power to work jointly with such concerns. The principle has already been agreed upon and accepted in the case of the Newcastle-upon-Tyne Gas Company and others.

The Basic Price.

Perhaps the most interesting section of the Bill is the one in which we propose to adopt what is called the basic price principle. At the present moment the Company operates under a sliding scale with a minimum dividend of 5 p.ct. This so far has worked quite satisfactorily, but the time has now come when it will be necessary for us to alter our meter taking arrangements, account collecting, and clerical work generally. With some of the changes we are proposing to make it would be difficult to work under our present system, and it seems appropriate to avail ourselves of a method which Parliament had already agreed to in the first instance in the case of the South Metropolitan Gas Company, followed by other London and Provincial Companies, and one which would give us the elasticity necessary for our purpose. The adoption of the principle will, we are sure, be to the advantage of the Company as well as to the consumer.

It will, I am sure, be interesting to you if I briefly explain the principle of the basic price and dividend.

How It Works.

As in the case of the standard price, a basic price per therm is fixed by Parliament. This price we may assume for this purpose is 11d. per therm, and at the end of a half-year or a year we calculate the sum of money which would have been produced if all the gas sold had been charged for at that price. As you know, however, the price charged by the Company is very much less than 11d., and therefore the actual revenue received would be a much smaller sum than the figure so arrived at, the difference being considered as the benefit which the consumers have received by being charged for their gas at the lower price. Of the sum represented by this difference between the two prices—the basic and the actual—Parliament allows the Company to calculate a certain proportion for the benefit equally of the shareholders and the co-partners. The sum available is distributed to an extent determined by the Directors by way of an increase in dividend to the shareholders over the basic dividend of 5 p.ct., the same amount being given to the co-partners by way of bonus on our present scale, and, if there is a balance, applied to the superannuation or other welfare funds.

I now propose:

> "That the Bill now submitted intituled 'A Bill to provide for the transfer to the Gas Light and Coke Company of the Undertakings of the Southend-on-Sea and District Gas Company and the Brentwood Gas Company; to confer various powers upon the Gas Light and Coke Company; and for other purposes,' be approved subject to such alterations as may be made in the Bill by Parliament and approved of by the Directors."

The Deputy-Governor seconded the resolution, which was carried unanimously.

Mr. F. W. Raffety said he had the greatest possible pleasure in proposing a very hearty vote of thanks to the Governor, the Directors, and the staff of all ranks of service in this great Company. First of all they thanked the Governor for the account he had given them of continued progress of the undertaking, and for the vigorous protest against the unfair boosting of electricity—a protest which had the hearty support of all those present, and the reasonableness of which would be appreciated by everyone outside who believed in a fair field without fear or favour for every industry. [" Hear, hear."] In these times, they were fortunate to hear of extended operations by the Company, which had resulted advantageously. If a ray of light was to be shed abroad, it was well that it should be shed by a gas company which, in a time like this, with dividend maintained, shone like a good deed in a naughty world. But they in the Gas Light and Coke Company were not in the habit of thinking only of profits and dividends. They were proud of the service that the Company performed for the community throughout its great area, and they were proud of its system of co-partnership, which, as the Governor had just told them, attained its majority last year. This was a system which worked so satisfactorily in the Company that it attracted the attention of outside observers; and this Company's example greatly assisted the adoption of the principle elsewhere. He thanked the Governor for the witness he bore on all occasions to the value of the co-partnership principle, and mentioned Lord Mersey also in the same connection. In conclusion, he said he would like every shareholder to join the Industrial Co-Partnership Association.

Mr. W. H. Faithfull, who seconded, remarked that his only regret was that his holding in the Company was not larger. In times like the present it was a great satisfaction to them

to see their shares standing so well, and to know that there was no fear of losing their money. He supported heartily all that the mover had said about the co-partnership system. The Company had come out of every industrial crisis without suffering the losses which had befallen so many non-co-partnership undertakings.

The resolution having been carried with applause,

The GOVERNOR returned thanks on behalf of his colleagues, himself, and the staff. They had all done their best, and so were pleased to know that their efforts were appreciated. He hoped they would be able to maintain the Company in the same prosperous condition during the coming year.

South Metropolitan Gas Company

ORDINARY GENERAL MEETING

The Ordinary General Meeting of the Proprietors of the Company was held at the Cannon Street Hotel, E.C. 4, on Wednesday, Feb. 4—Dr. CHARLES CARPENTER, M.Inst.C.E., in the chair.

The SECRETARY (Mr. Frank Day) read the advertisement convening the meeting, and the minutes of the last Ordinary General Meeting and Extraordinary General Meeting. Thereafter the seal of the Company was affixed to the Register of Proprietors.

The PRESIDENT:

Ladies and Gentlemen,—In the absence of any objection being raised, I will assume that, as usual, you do not desire the Directors' report to be read. It has been circulated with the statement of accounts to every shareholder.

The working results of the undertaking for the past twelve months are typical of many that have preceded them; and we might congratulate ourselves upon what we have accomplished, were it not for the unprecedented happenings with which we are confronted, as, indeed, is the case with every other gas undertaking in the Kingdom. I shall refer to this in the latter part of my remarks to-day. As the report tells you, we had a decrease in the sale of gas in the early months of the year, due to the fact that the temperatures then prevailing were above the average. Our sales are, as you know, largely influenced to-day by changes in climatic as distinct from seasonal conditions, and this is owing to the important heating load. I am glad to say, however, that we are now making good this decrease, which for the year under review amounted to 2·97 p.ct.

REMARKABLY LOW "GAS UNACCOUNTED FOR" FIGURE.

We may also congratulate ourselves upon the small fraction —for it is now a fraction, to be exact 0·88 p.ct.—of the gas we produce which is unaccounted for. This low figure is a sure test of the efficient maintenance of our distributing plant, and it has only been attained by reason of the constant and intelligent care with which this part of our business is watched by the officials concerned. It is to them, also, that the credit is due for the magnificent examples of scientific street lighting which may now be seen on some of the main thoroughfares in South London. Unfortunately, it happens that not infrequently these are believed to be electric and not gas lights by passing motorists or pedestrians who do not realize the greater penetrative and diffusive power of the older illuminant when it is used in the latest types of lamps.

COKE A BYE-PRODUCT—NOT A "RESIDUAL."

Now with regard to products, you may have noticed that we do not nowadays refer in our reports to coke as a residual, but as a bye-product, of coal carbonization. The reason is that to-day we give similar care and attention to its production as has been so long exercised, and indeed required by our Parliamentary Statutes, in the case of gas. In the first place, we are careful not to take out of the coal by the carbonization process all the gas that is possible; there is a point beyond which we do not carry this treatment, in order that the resultant material may be more readily ignited. Moreover, we not only exercise more pains to ensure a reduction in the quantity of shale and other impurity present in the original coal, but we specially treat the coke in order to eliminate these undesirable constituents before we break and screen it for the market. The result is the manufacture of a coke which is a very different article from that which used to be sold, and, in some places, I am sorry to say, still is. There are, as you know, large quantities of this product exported from the Thames; but in my opinion much of this could be sold at a better price at home, if the care in manufacture which I have described were undertaken by the producers. Their aim should be to produce a standard coke, and their association together for this and for marketing purposes would be a desirable advance. I am glad to say that there appears likelihood of progress in this direction. I might further mention that the ash-eliminating domestic coke grate, with which is combined a gas-lighting burner for starting-up, continues to give satisfaction. Up to the present about 10,000 of these grates have been installed in our district of gas supply, and we have recently placed upon the market a water heater for use in conjunction with it.

Ammonia shows no signs of improvement, nor can any, I think, be expected, as there is a world-wide distribution of synthetic nitrogen-producing works which to-day are the governing factors in determining prices. A remunerative market developed through us in the Far East has for this reason passed to others. Tar prices have fallen mainly by reason of increased production at home and the smaller demand for pitch and creosote abroad. We are now splitting-up our oils into a greater number of qualities, and one of these, the foundation of what is called winter-wash, has achieved a considerable reputation as a dressing for fruit and other trees. To do this we have had to incur a somewhat heavy expense in adapting our plant to the altered requirements, but for which our net income from these products would have been higher. I need not add that the trade depression from which both hemispheres are at present suffering makes business very difficult; for while tar and ammonia distillation are not our main occupation, but are ancillary to gas-making, they have to stand upon their own feet as profit-making undertakings.

LOW-TEMPERATURE PLANTS AT EAST GREENWICH.

You will remember that last year I told you there were two low-temperature plants being installed at our East Greenwich Works. One of these, after a period of promise, broke down from mechanical, but nevertheless very serious, weakness. Whether the conditions under which it worked were more exacting at East Greenwich than they were at the Essen Colliery where the process was originally worked out, I am unable to say. But, unlike a colliery, a gas-works could not look favourably upon the use of a plant from which the production of gas might be liable to fail at short notice. I should not like the occasion to pass without expressing our appreciation of the nature of our working relations with Messrs. Coal Oil Extraction, Ltd., who were the promoters of the process. We have agreed to lease them the land upon which the plant is erected pending the achievement by them of results reported from similar apparatus in America; but it is no longer obligatory upon us to purchase the experimental unit. As regards the "Coalite" process, I cannot say anything new at the moment, other than that it is gradually being put to work. It is not yet possible therefore to discuss working results, as none are available. We erected this installation believing that the time had come for testing upon the large scale the possibilities of a section of the public requiring low-temperature fuel. I have before expressed the conviction that all coal coming into London for domestic use should pass through the gates of a gas undertaking, and we selected the "Coalite" process from several others, as being one which had been in operation for some time, and which we believe, if handled properly, is capable of yielding a low-temperature fuel of high quality. The economics of the process cannot yet be stated. Furthermore, in making this experiment we hope to consolidate our position as suppliers of heat energy to domestic consumers, whether their needs be for gas for lighting, heating, cooking, or for the supply of hot water; coke for the open fire or central heating; or low-temperature fuel for the open fire. But I need not remind you that our success in all these directions is fundamentally dependent upon the profitable marketing of the gas produced in the process of carbonization.

The remodelling of our gas-making plant at Rotherhithe was completed for the past winter's work, and is, upon the whole, justifying our expectations. The requirement for manual labour in running the plant has been reduced to a low point; and I sometimes think of what I told you in 1911, when I stated that so happy was our relationship with our employees that we only adopted labour-saving appliances when the work could not be properly performed by hand. The aftermath of the war has, alas! destroyed our ideals in this respect, and although good feeling between us and our employees was never more in evidence than it is to-day, we follow as a matter of course the trend of all industry by substituting machines for men when we are able so to do.

THE DYESTUFFS ACT.

If my task to-day were not of the exceptionally serious character it is, I would have liked to refer at some length to the Dyestuffs Act, since from a few weeks after the outbreak of the war I was, through this Company, closely concerned with the appalling state of affairs brought about by our complete neglect to maintain an industry as essential in national defence as is an arsenal or dockyard; but I feel I ought to take this opportunity of expressing my intense relief that the protection given to our country by the Dyestuffs Act is being continued. The unrestricted import of incandescent gas mantles, unlike that of dyes, is a commercial matter, and not a national one. The incandescent gas mantle is, to a greater or lesser degree, of vital necessity to-day to all gas undertakings. We ourselves have been for some years acquiring knowledge of the technique of its manufacture, and we now produce in our factory an article which is of the highest quality in its light-giving and enduring properties. Yet, although we do not work for profit, we could not compete in price with imported products made under conditions of employment very different from the standards to which we have been accustomed in a co-partnership

business. Inferior mantles of uncertain life do great harm to our business as suppliers of gas for illuminating purposes.

As regards the issue of debenture stock referred to in the next paragraph of the report, you have already heard that the issue was largely over-subscribed, and I need only add that substantial preference was given to existing shareholders in the allotment.

Arrangement with the Commercial Company.

As regards the paragraph dealing with our arrangement with the Commercial Gas Company, I need say little. The proposals for association were very fully outlined by me when I laid them before you last July, and now that they have been carried out I see no reason to doubt that their usefulness will be realized both by the Commercial Company and by ourselves. Gas undertakings have not behind them the powerful organizations which constitute so much of the strength of their competitors. The association of gas undertakings one with another can do a little, I believe, to correct this defect. We can pool our research, even though it must always remain insignificant in extent compared with that undertaken by (say) the General Electric Company. We can also pool our provision for encouraging improvement in the quality of the coal we purchase, and thus generally raise not only the standard of working, but the quality of our bye-products. We can learn from each other and take counsel with each other, and I am pleased to say there are already more signs of progress arising out of this new habit than would have been forthcoming by many years of isolation under completely independent systems of control.

The next paragraph in the report deals with the dividend proposals. The payment of this at the rate of 1¼ p.ct. above the basic rate of 5 p.ct. carries with it the obligation to divide among our employees a co-partnership bonus amounting in the aggregate to £83,874. I might further say that, were it not for the heavy expense of reconstruction work during the year, a larger contribution would have been available for the Special Purposes Fund than the £40,000 now allocated. The contribution thereto is a useful, though not a large, one.

A Position of Great Gravity.

So far, ladies and gentlemen, the statement I have put before you to-day, and the remarks I have made thereon, might have formed the theme of the speech delivered to you upon any one of the thirty-three occasions upon which I have had the honour of addressing you. I have come before you with stories of labour troubles (not, I am proud to say, our own), strikes of miners or of transport workers, shortage and high prices of coal, disappearing dividends under war conditions, inability to maintain our work and plant in time of war, and the hampering effect of the legislative fetters upon our business. But I have never come with such a serious condition of things to place before you as I must now endeavour to do. Let me remind you, first of all, that for the greater part of a century we have carried on under statutory authority, and under statutory regulations and control, a business which has been, and still is for that matter, engaged in supplying one of the necessities of everyday life required by the bulk of the population. The methods of raising capital, the interest allowed upon it, the provision of reserves, and so forth, have all been subject to Statutes and also limitations laid down by the Parliament of the land, and in passing it is interesting to observe that to-day's requirements as to allocating the profits made from the supply of electricity to the Metropolis are based upon lines on which the Gas Companies have provided a co-ordinated service of a supply of smokeless and gaseous fuel. They insist that the service shall be primarily "for the public benefit, and not with the object of making the maximum profit first and affording public service after."

The Introduction of Electricity.

Now one often hears the remark "Ah! electricity is only in its infancy;" but, ladies and gentlemen, it is fifty years or thereabouts since the Jablochkoff electric candle first made its appearance upon the Thames Embankment, and it was but a short time afterwards that Sir Coutts Lindsay, Bart., was supplying not only his own public picture gallery, known as the "Grosvenor," with electricity from steam-driven generators installed in the basement, but had carried across Bond Street and some adjacent thoroughfares overhead wires to give a supply to some of the luxury shops of that area. From that time the business of electric supply has gone on developing, until it has become the extensive organization we know to-day. I remember very well the slump in gas shares which those Jablochkoff candles brought about, and how fortunes were made by far-seeing people who realized that there might be room for the large-scale distribution of both supplies of energy. The remarkable fact stands out that the then undreamt-of development of the distributing of the new form of energy did not check, but indeed stimulated, a corresponding development in the use of gas, not merely through new channels, but largely by the old one of light-giving, made possible as it was by Count Auer von Welsbach's invention of the gas mantle. These two great industries of gas and electricity supply have gone on developing side by side; each recognizing that there were fields of usefulness for both, and each recognizing that both forms of energy possessed advantages and disadvantages peculiar to themselves; and each, as I have said, by its commercial and scientific activities stimulating its competitor. Take, for example, the distribution of power from a central source. There are a great number of instances where this is a convenience and an advantage, but the applications of electricity for this purpose are not universal. For instance, the use of compressed air would obviously be far less dangerous than electricity in a mine liable to outbursts of fire-damp, and, furthermore, a large amount of the mechanical energy consumed in the Metropolis is distributed hydraulically. There are few instances where the power needs are more diverse than in the manufacture and supply of gas, from the cranes unloading coal at our wharves to the pneumatic tools used on our street mains. Yet in all these we do not use a single electrically-generated horse-power, although, it is true, we use some electricity for lamp charging, for the electro-plating of gas fittings, and for operating accounting appliances.

Protest against Unfair Treatment.

Now, commercially it is easier to advertise electricity than gas. We know quite well that it is only necessary to call a body-belt or a hair-brush "electric" to ensure for it a ready sale. Gas has no such advantage; it is neither novel nor fashionable, any more than is "Shanks's pony" as a mode of locomotion. Even so, and if gas undertakings are not wholly free from blame by reason of the fact that they may not have used systematically and scientifically the medium of advertising, the fact does remain that there are many people to-day who continue to use gas lighting, not because they cannot get electricity, but because they prefer the pleasant warmth and the soothing light of gas. It is possible that this omission to advertise the acknowledged advantages of gas light is partly, though certainly not wholly, responsible for what I will call the official, and indeed the Governmental, attitude to-day towards gas undertakings. In a recent letter to the Press, Lt.-Col. Ogilvie records the fact that in nearly 100,000 municipally-owned houses in this country, the tenants are not allowed to choose the form of lighting or heating they prefer. He further states that in thirteen areas the Local Authorities have prohibited the use of gas for any purpose whatever on their estates, and in forty-seven other cases specific uses of gas—that is, for lighting or heating—are forbidden.

This serious state of affairs has been developing also in this Company's area, and while we were considering what we could do to meet this new and unprecedented situation, some of our employees took the matter into their own hands, and, having regard to the seriousness to them of any part of our business being compulsorily shut-down, decided first to form from among themselves a small Committee, and then to get into touch with London County Councillors and Members of Parliament representating districts in which our employees were interested, either as workers or as dwellers. Amongst others they wrote to the Minister of Transport. I will not trouble you by reading the whole of the letters passing between these workpeople and the Minister, but I must quote from one. The Minister says, *inter alia:*

> "I am inclined to the opinion that the South Metropolitan Gas Company is employing somewhat undesirable means in furthering the interests of a particular commercial undertaking. Provided the public interest is served, I have every desire in public matters to be fair between the various industrial undertakings, but the South Metropolitan Gas Company does not ease the difficulties which arise out of the competition between gas and electricity by employing political methods of furthering trade interests (using their employees in the process) on lines which were alleged against the brewers before the war. At any rate, so far as I am concerned in my public work, I shall continue to be guided solely by the furtherance of the public interest, and I will not submit to attempts at intimidation, however scientific, made by political pressure of commercial undertakings."

Now, I must confess my complete ignorance of what the brewers were alleged to have done before the war. I am not, like the Minister of Transport, a politician. I make the confession here to you, ladies and gentlemen, that I have never meddled in politics, and if that implies, as it may, any discredit, and lack of a quality which should be possessed by the head of your undertaking, I can only plead in extenuation that for over half-a-century I have been too deeply engaged in the scientific and technical development of a Public Utility Undertaking in which I found myself as a young man, with ideals of the supply of pure and cheap gas, and the furtherance of the social and physical welfare and health of the employees engaged therein. [Applause.] There is not a shadow of truth in the suggestion of the Minister that what has happened is of political origin, engineered by this Company.

Depriving Tenants of a Gas Supply.

What did happen was that our employees took alarm over the fact that one Municipal Housing Committee after another declined the offer of this Company to take the chance of the business it could get, and completely to pipe the newly-constructed houses free of cost to tenant or owner. This privilege, for of course it was one, the Councils, being the property owners, refused, their attitude being in this respect quite different from that of the ordinary estate builder, who is quite content for the pipes and wires to go in while building is in progress. It is curious and certainly significant that the Councils should have taken up so peculiar an attitude. The proffered service of gas facilities would cost them nothing. Their tenants are unrestricted in the use of coal or oil; they may consume either in the Municipal tenement. But gas; NO!

I cannot help thinking that in some way or other this attitude may have been inspired in some measure by Whitehall. It

is true that in a speech made at Woolwich a little over a year ago by the Minister of Transport upon the development of the electrical industry, he is reported as saying that "he was not attacking or seeking to minimize the great gas industry, one of the most progressive industries in the country. There was room for both, and the electricity industry would be wise if it learned much from the enterprise and initiative of the gas supply industry." "Room for both," said the Minister of Transport! Some months earlier he told us through the Press his own ideal: "In my own home," said he, "electricity is lighting the rooms, is heating the rooms—though not to the exclusion of the Sunday evening coal fire in the winter!—is cooking the food, giving us a constant hot water supply, heating the flat iron, and boiling the kettle." There does not seem much room for both there! I rather think the speech at Woolwich must have been "political." If the example of the Minister goes for anything, and the influence he wields as the official propagandist of the electrical industry is certainly an enormous one, electricity on week-days and a coal fire on Sunday would not provide much occupation for gas undertakings, even though most consumers were not so fortunate as the Minister in having the Borough Council's station handy for the correction of domestic electrical defects. There is no disguising the fact that if his example is taken rather than his precept, the use and service of gas would be emphatically wiped out of existence.

This will never be the case so long as every member of the public, whether he lives in Park Lane or Poplar, whether he lives in his own mansion or in a Municipal tenement, is free to use the medium he prefers for cooking his food, or for warming and lighting his rooms. Surely the electrical industry, with some of the best brains of the country devoted to its development, is able to go ahead stimulated by our competition, as we are by its, without alternate coaxing or lecturing by any Minister of State. [Applause.] We have been told it is one of the bright spots in British business at present.

Fair Play for Gas.

Why is one public utility specially selected for support at the expense of another which no one has ever suggested does not fulfil a useful and indeed a necessary purpose? Take, for instance, the address of the Minister of Transport to the members of the British Electrical Development Association, who were urged by him to "remember that the domestic lighting load, with summer-time on the Statute Book, was not a particularly attractive commercial proposition," and that "it was also the duty of supply undertakings to see that they had adequately equipped sales organizations which would help the domestic consumers to utilize electricity for cooking, heating, flat irons, vacuum cleaning, and even for the morning cup of tea before people get out of bed." And later, at the Guildhall Conference, he urged his hearers to go out for the full domestic load and not to fear to go to the Government for help, since it was eager to assist wherever possible. The Minister of Transport is a member of a Government which stands for freedom for the citizen, justice, and fair play. [Laughter.] The gas industry of to-day does not need the assistance of Government credit to carry on and develop its business. ["Hear, hear."] It never has. Cannot State-supplied credit be more properly applied? Must industrious Peter be destroyed, in order to make work for unemployed Paul?

I have now to move:

> That the Report and Accounts now presented be received and adopted, and the Report entered on the Minutes.

The Vice-President (Mr. Frank H. Jones): It has been my usual custom to second formally the resolution which the President has submitted, but on the present occasion I should like to say a word or two in addition. The gas industry asks no favours, but it does demand fair and proper treatment, and I want to assure you, and to assure Dr. Carpenter, that I associate myself—and I know in this I speak also for my colleagues on the Board—entirely and completely with every word he has said. We shall have to take steps to see that our undertaking gets fair treatment. ["Hear, hear."]

The President having invited questions, and there being no response, remarked: I suppose I may take your silence as approval of what I have said, and I ask you to vote on the resolution.

The motion for the adoption of the report and accounts was then carried unanimously.

The Dividend and Re-Elections.

The President then moved:

> That the following dividends be now declared—viz., 6 p.ct. per annum for the half-year ended 31st December last on the preference stock, and 6¼ p.ct. for the year ended 31st December last on the ordinary stock, *less* the interim dividend paid in respect of the first half of the year; and that warrants be transmitted to the registered addresses of the proprietors by post for the amount of such dividends.

The Vice-President seconded this, and it was agreed to.

On the proposition of the President, seconded by Mr. Vernon Hewes, Mr. Benjamin Robert Green and Dr. Edward Frankland Armstrong, F.R.S., were re-elected Directors of the Company.

Mr. B. R. Green: Allow me to thank you for re-electing me a Director of this Company—a position which I highly appreciate and which I regard it to be a privilege to occupy. I shall continue to assist my colleagues in their deliberations to the best of my ability.

Dr. E. F. Armstrong: I associate myself with all that my colleague, Mr. Green, has said.

Mr. John H. Fry was thereafter re-elected an Auditor to the Company, on the motion of Mr. A. B. Pasmore, seconded by Mr. Oswald B. Green.

Vote of Thanks.

Mr. T. A. Braddock: It is my pleasure to propose a vote of thanks to the President, Directors, Officers, and other employees of all ranks, for their services to the Company during the past year. I should like to thank the President very much indeed for the strong and emphatic references he has made, and for the prominence given in the report, to the unfair boosting of electricity, as against the gas industry. ["Hear, hear."] All the gas industry asks is for fair play. It has been suggested to me that in making this matter prominent we may show certain signs of alarm that may have the effect of depreciating gas stocks; but whether this is so or not, I think the proper thing has been done. It is up to each of us in his own way to draw attention to the existing state of affairs, so that the real position may become known in ever-widening circles throughout the country.

The resolution was seconded by Mr. James R. Burnage, and carried with applause.

The President: I am very grateful, and my colleagues are, too, for this expression of your confidence. I am quite appreciative of the possibility that something I have said to-day may or may not have some influence upon the value of your stocks; but supposing I knew that it would, I should not have departed one iota from the course I have taken, or have left unsaid one word I have said. I should not have felt I was worthy of the confidence you have reposed in me so long and so fully, unless I had shared with you my knowledge of a state of affairs which you otherwise could not possess. Mr. Braddock has pointed out that you can all help. I have placed you in full possession of the facts. There is not a single thing I said that cannot be proved up to the hilt in every way, in the most complete manner, chapter and verse. I hope you will do what you can in pressing in every way for the one thing we want—the thing that we are all entitled to, whether we are a statutory Company or private citizens—fair play and justice. We ask for that and nothing more. I thank you.

PARLIAMENTARY INTELLIGENCE

[From Our Special Correspondents.]

House of Lords.

Private Bills.

The Lowestoft Water and Gas Bill and the Royston and Brodsworth Gas Bill, having been passed by the Examiners, were read a second time and are awaiting Committee.

Petitions have been deposited against the Lowestoft Bill by the East Suffolk County Council and the Lowestoft Corporation; against the Royston and Brodsworth Bill by the Urban District Councils of Cudworth, Hemsworth, and Royston, and by the West Riding County Council.

A petition has been presented by the Grand Union Canal Company against the Gas Light and Coke Company's Bill.

Special Orders.

There are no Special Gas Orders at present before the House of Lords.

House of Commons.

Private Bills.

The Aldershot Gas, Water, and District Lighting Bill and the Sheffield Gas Bill have been passed by the Examiners and committed.

Special Orders.

Plans have been deposited in connection with the Abergavenny Gas Order and the Wandsworth and District Gas Order.

Merchandise Marks Act.

The Standing Committee of the Board of Trade has issued a report dealing with air and gas compressors and exhausters, recommending the making of an Order for the marking of imported articles.

REGISTER OF PATENTS

Wet Gas Meters.—No. 340,728.

THORP, F., BUTTERWORTH, E., and the ROTARY METER COMPANY, LTD., all of Kennington Road, S.E. 11.

No. 36,628; Nov. 29, 1929.

This invention relates to wet gas meters, and has for its object to provide an improved construction of the bells and gas passages of the meter for effecting the requisite distribution of the gas without the employment of mechanical distributing valves.

Each bell is divided into an inlet compartment, an outlet compartment, and a measuring compartment. The bells are arranged in pairs, each pair reciprocating or oscillating in unison. Two pairs which have their times of reciprocation or oscillation definitely correlated, operate in conjunction with one another to form a unit. The inlet compartment of one bell and the outlet compartment of the other bell of a pair communicate with one another by a pipe which also communicates with a measuring compartment of one of the bells of the other pair. The inlet compartments of all the bells are so constructed that they can only receive gas from the gas inlet when the compartment is raised above a certain level out of the sealing liquid, and likewise the outlet compartments are so constructed that they can only deliver gas to the outlet space which surrounds the bells when they are raised above a predetermined level out of the sealing liquid. Where the bells are of the oscillatory type, a pair of bells may be built as one unit, and a gas supply section be located about the central pivotal point.

The operation of the meter bells is as follows: As one bell rises, gas is admitted to its inlet compartment and enters the pipe communicating with the outlet compartment of the other bell of the pair. Such gas cannot pass through the outlet compartment because it is sealed by the liquid, but it passes by the pipe to the measuring compartment of a bell of the other co-operating pair. When the direction of motion of the bells reverses, the inlet compartment becomes sealed and the outlet compartment unsealed, so that the gas from the measuring compartment issues through the outlet compartment to the gas space around the bells. A similar sequence of operations takes place with each pair of inlet and outlet compartments and the co-acting transfer compartment.

Water Gas Condensation.—No. 339,885.

HUMPHREYS & GLASGOW, LTD., of Westminster (Assignees of HAUG, J. S., of Philadelphia).

No. 6054; Feb. 24, 1930. Convention date, May 6, 1929.

In the manufacture of carburetted water gas, the gas is produced intermittently by the individual water gas sets, and although when there is a plurality of sets in operation the gas-making periods overlap and tend to produce a more steady output, the flow from the generating apparatus as a whole fluctuates considerably. The relief holder receives this supply, which fluctuates both in quantity and quality, and functions to deliver a steady supply of gas of more uniform quality, through the exhausters to the purifying apparatus.

If the condenser is placed on the inlet of the relief holder, undue back pressure may be thrown on the generating apparatus. If the condenser is placed on the outlet of the relief holder, the generating apparatus is relieved of this back pressure, but the exhausters are subjected to undue suction, and gas is delivered hot to the relief holder, containing large quantities of steam, occupying a large volume and requiring an undue relief holder investment.

The object of this invention is to provide an arrangement which does not throw undue back pressure on the generating apparatus or create undue suction in the exhauster inlet, and does not require undue relief holder investment. For this purpose a relief holder is connected to the condensing apparatus intermediate of its inlet and outlet gas connections. In such an arrangement provision is made for desirable counterflow relation between the gas and the condenser cooling water, discharging all the water but slightly below the temperature of the uncooled gas, and passing the coolest water in heat transfer relation only with the cooled gas about to be discharged to the exhausters.

Gas Company Results in 1930

Cambridge.

The Directors of the Cambridge University and Town Gas Light Company submit the following report for the year ended Dec. 31, 1930. An interim dividend at the usual rates, *less* income-tax, was paid in August for the half-year to June 30 last, and the Directors recommend the declaration of a dividend at the same rates, *less* income-tax, for the half-year ended Dec. 31. In April last the Board of Trade made an Order under the Gas Undertakings Act of 1929 authorizing the Company to raise additional loan capital to an amount not exceeding the aggregate amount of the paid-up share capital for the time being. Under the powers thus conferred the Company have issued a further sum of £60,000 5 p.ct. irredeemable debenture stock to provide capital required for the extension of the works and mains.

Cardiff.

The Directors of the Cardiff Gas Light and Coke Company present the following report for the year ended Dec. 31, 1930. An interim dividend to June 30 last having been paid on the consolidated ordinary stock at the rate of 6 p.ct. per annum, and on the preference stock at the rate of 4½ p.ct. per annum, the Directors recommend payment of a final dividend for the year on these stocks at the same rates, *less* income-tax. The year under review has been marked by difficult trade conditions which have adversely affected revenue from residuals in particular. In these circumstances the accounts disclose satisfactory working results. The 7½ p.ct. redeemable debenture stock will fall due for redemption on July 1, 1931, and the requisite authority of the proprietors has been obtained for the creation and issue of new debenture stock to meet this requirement.

Cleveland.

The profit made during the half-year to Dec. 31, 1930, by the Cleveland Gas Company has been £921, to which must be added the amount brought forward from last half-year of £3532, making the balance at the credit of the profit and loss account of £4454. This sum the Directors propose should be disposed of as follows: In paying a dividend at the rate of 3 p.ct. per annum (*less* income-tax) for the half-year, and in placing to the contingent fund (making it £8864) the sum of £200, leaving £3656 to be carried forward to next half-year's account.

Durham.

The profit and loss account of the City of Durham Gas Company shows an available balance of £7691 (after deducting interim dividend), and the Directors recommend that a dividend for the half-year ended Dec. 31, 1930, of 5 p.ct. on the original capital and 3½ p.ct. on the additional capital be paid (*less* income-tax).

Newport (Mon.).

The Directors of the Newport (Mon.) Gas Company submit the following statement of accounts for the year ended Dec. 31, 1930. Owing to the prevailing industrial conditions and to severe depression in the market for residual products the Directors regret that it has been necessary to supplement the profit for the year by a transfer of £2000 from the reserve fund account in order to meet the customary interest and capital charges. An interim dividend at the statutory rate of 5 p.ct. per annum on the consolidated stock of the Company, for the half-year ended June 30, 1930, having been paid, it is now recommended that a final dividend at the same rate be declared for the half-year ended Dec. 31, 1930.

Pudsey.

The sales of gas by the Pudsey Gas Company show a decrease of 9·74 p.ct. when compared with the previous year, which is principally due to the severe depression in trade and the loss of public lighting. The balance of net profit, after deducting the interim dividend at the rate of 10 p.ct. per annum, paid on Aug. 1 last, amounts to the sum of £12,885, from which the Directors recommend the proprietors to declare a dividend for the past half-year at the rate of 10 p.ct. per annum.

Weymouth.

The sales of gas by the Weymouth Consumers' Gas Company again show an increase, the amount sold during the year being 1,139,431 therms, or 247,702,500 c.ft. This, compared with the previous year, shows an increase of 1,748,100 c.ft. Tenders have been received and orders placed for extensions to the Company's manufacturing plant, and the work has now been commenced. The Directors recently invited tenders for the issue of £31,823 5½ p.ct. redeemable preference stock, which has been fully subscribed. After providing for the interest on the debenture stock, the balance at the credit of the net revenue account is £3501, out of which the Directors recommend the payment of a dividend on the ordinary stock at the maximum rate of 5 p.ct. per annum, *less* income-tax.

Yorktown (Camberley).

The Yorktown (Camberley) and District Gas and Electricity Company's business continues to show satisfactory expansion, as indicated by the additional quantity of gas and electricity sold. The gross profit for the year in respect of the combined undertaking amounts to £19,298, and the profit and loss account shows that after providing for debenture and other interests, and dividends on preference stock for the year 1930,

and the dividend at the rate of 6¼ p.ct. per annum, *less* tax, on the consolidated ordinary stock for the half-year to June 30, 1930, there is a balance of £15,593 available for dividends, and the Directors recommend that dividends at the following rates be declared for the half-year ended Dec. 31, 1930: 5 p.ct. per annum on the consolidated preference stock, and 6¼ p.ct. per annum on the consolidated ordinary stock, both *less* income-tax. The ordinary dividend will absorb £3236, in addition to the preference dividend already provided for, leaving £12,356 to be carried forward to the next account.

Trade Notes.

Power Transmission Equipment.

Messrs. Williams & Womersley, of Wakefield, have recently issued a catalogue (No. 130) describing and illustrating their power transmission equipment. The catalogue gives in concise and compact form prices and dimensions of the firm's standard lines of products, including "Apex" four-way adjustable fittings, "Ajax" rim type friction clutches, variable speed gears, &c.

New "W.-D." Installation for Sittingbourne.

A new vertical retort plant is to be erected by the Sittingbourne and Milton Gas Department, and we understand from Mr. G. V. Heeley, the Engineer and Manager, that sanction has been received from the Ministry of Health to borrow £12,500 for the purpose. The contract has been placed with the Woodall-Duckham Vertical Retort and Oven Construction Company (1920), Ltd.

Welded Steel Tanks for Fuel Oil.

From Messrs. Robert Jenkins & Co., Ltd., we have received a recently issued folder describing their welded steel tanks for fuel oil. These are made from steel plate, fitted with dished ends, 18 in. by 12 in. manhole, with joint ring and bolted cover, necessary connections and calibrated gauge rod. They are of welded construction and design throughout by metallic-arc process and tested to 5 lbs. per sq. in. air pressure.

A Merger.

Users of spray-painting and finishing equipment in the British Isles will be interested to know that a merger has been arranged between the Aerograph Company, Ltd., of 43, Holborn Viaduct, E.C. 1, and the De Vilbiss Company, Ltd., of West Drayton, Middlesex. Under this new plan, the Aerograph Company, Ltd., in addition to continuing the manufacture and sale of Aerograph equipment, will also become sole distributors of De Vilbiss equipment in the United Kingdom and the Irish Free State with effect from March 2, 1931.

Klönne Gasholder Contracts.

We learn from Messrs. Dry Gasholders, Ltd., that up to the present 28 gasholders of the Klönne waterless type have been contracted for, recent orders including Prague, 1,750,000 c.ft. capacity; Eindhoven, 2,500,000 c.ft. capacity; and Florence, 1,000,000 c.ft. capacity. Also an order has just been received for a 3,500,000 c.ft. Klönne waterless holder for the Paris Gas Company, being the fifth order for a holder of this type received by the French Licensees since the exploitation of the Klönne patents have been dealt with in France.

The "Boreas" Automobile Compressor.

A leaflet has recently been issued by Messrs. Lacy-Hulbert & Co., Ltd., of Beddington, Croydon, dealing with their "Boreas" automobile compressor. This plant, state the makers, is ready to go anywhere at any time to operate road breakers, picks, tampers, rivets, chippers, caulkers, spray painters, &c. It will travel at 30 m.p.h., and will deliver 50 c.ft. of free air per minute at 100 lbs. pressure. The plant embodies all the necessary parts and fittings, with provision for carrying the usual tools, hose, spares, &c., while there is also room for one or two operators besides the driver.

Gledhill-Brook Time Recorders.

One of the greatest assets in these days when lower production costs are a necessity is an efficient time checking and costing system. Punctuality is the foundation upon which to build a successful business; yet millions of pounds are lost annually through wasted minutes at starting and stopping times. Such wastage stifles business, eats into profits, and influences the worker, who becomes easy-going, or even careless. The best method of enforcing punctuality and increasing the efficiency of the worker without showing favouritism is by the installation of a reliable time recording system. Such a system is the Gledhill-Brook, designed for use in either small offices or large works. The Gledhill-Brook Time Recorder is reliable, accurate, and unfailing in its service; it quickly pays for itself out of the saving it ensures. The machine shows on a card the exact time of arrival and departure for every man, also the start and finish of every job. It is accurate, impartial, and unerring; hence it is accepted by the workers who feel they get a square deal. The employer also feels satisfied that he pays only for time worked. Many variations to suit different trade conditions are made by the manufacturers, the Gledhill-Brook Time Recorders, Ltd., of Huddersfield.

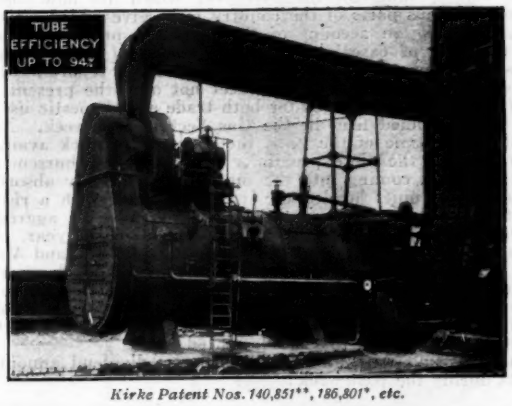
NOW STANDARD—

SPENCER-BONECOURT
PATENT WASTE HEAT
BOILERS

NO. 1. 1 TON STEAM FROM WASTE HEAT FOR EVERY 1¼ TONS OF COAL CARBONISED is being obtained from waste heat alone with Spencer-Bonecourt Patent Waste Heat Boilers.

NO. 2. 5¼ lbs STEAM PER LB OF COKE put into the producers is being obtained from waste gases at 700°C. with these Boilers.

NO 3. 4½ lbs STEAM PER LB OF COAL put into the producers is being obtained from waste gases at 600°C. with these Boilers.



*Kirke Patent Nos. 140,851**, 186,801*, etc.*

NO. 4. 5 LARGE LANCASHIRE BOILERS FIRED WITH COKE & COKE BREEZE HAVE BEEN SHUT DOWN BY 2 SMALL SPENCER-BONECOURT PATENT WASTE HEAT BOILERS

NO. 5. No Economisers used in any of the above performances.

NO 6. WATER GAS PLANTS have been fitted with these Boilers.

NO. 7. 14 REPEAT CONTRACTS have been received from *One Firm alone.*

NO 8. HORIZONTAL, VERTICAL & INCLINED RETORTS, ALSO VERTICAL AND INCLINED CHAMBERS have been fitted with these boilers.

NO. 9. £12,000 PER ANNUM RETURN ON £6,000 ORDER is being obtained by one customer.

NO. 10. These Boilers have been installed in the Continents of EUROPE, ASIA, AMERICA AFRICA & AUSTRALIA

SPENCER-BONECOURT
LIMITED

THE WASTE HEAT RECOVERY SPECIALISTS
50-64, Broadway Buildings, Westminster, S.W.1
Telegraphic Address: "Bonecourt, Sowest, London." 'Phone: Victoria 2802-3.

GAS MARKETS & MANUFACTURES

Stock Market Report.

[For Stock and Share List, see later page.]

As an outcome of the remarks made by both Sir David Milne-Watson and Dr. Carpenter at the annual meetings of their respective Companies last week (full reports of which appear elsewhere in this issue) on the Government's policy towards electricity, it is not surprising that gas, both as a commodity and an investment, has been much in the public mind during the last few days. It is well that the facts have been made known, and already one local authority supplying electricity has intimated its intention of investigating the claims of the local gas undertaking. When the unfairness of the present situation is fully realized, we may expect that similar action will be taken by others.

In the train of these events, it has been suggested in some quarters that holders of gas stocks should watch their investments. We would add that in doing so they cannot fail to be impressed by the strength of these holdings as compared with those in the majority of trading concerns. Moreover, the reports and accounts for the past year which are now coming in from various parts of the country must give added satisfaction, not only on account of the increased profits shown in the majority of cases, but also by reason of the very progressive policies (as outlined in the various reports) which the companies are pursuing to meet not only the present but the future demands for gas for both trade and domestic use.

Prices continued firm in the Gas Section last week. As is usual at this time of the year, there was little stock available by reason of the close proximity of dividend disbursements, and any stock coming into the market was speedily absorbed. Newcastle £1 units headed the list of increases with a rise of 9d. to 18s. 9d.-19s. 3d. at the local Exchange—an aggregate improvement of 2s. since the commencement of the year. Imperial Continental gained another 5 points to 355-375, and Aldershot 4 p.ct. preference rose 3 points during the week prior to becoming *ex* div. on Friday last. Cardiff consolidated improved 2 points to 97-100, and several issues showed increases of 1 point. Apart from *ex* div. markings, the only fall was that of Gas Light £1 units by 1s. to 19s. 6d.-20s. 6d.

The following were among the ordinary dividend announcements during the past week:

—	December Half Year.	Year 1930.	Year 1929.
	P.Ct.	P.Ct.	P.Ct.
Croydon maximum dividend	2½	5	5
,, sliding scale	3½	7	7
Portsmouth 4 p.ct.	4	8	8
Uxbridge	3½	7	7
South Suburban	3½	6½	6½

Current Sales of Gas Products.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Feb.* 9.

The prices of tar products remain unchanged, and are as follows:

Pitch, about 45s. per ton f.o.b.

Creosote, for export, 5½d. to 5¾d. per gallon f.o.b.

Pure toluole, 1s. 11d. to 2s. per gallon; pure benzole, about 1s. 8d. per gallon; solvent naphtha, 95/160, about 1s. 5d. per gallon; and pyridine bases, 3s. 6d. to 3s. 9d. per gallon.

All the prices for spirits are *ex* sellers' works.

Tar Products in the Provinces.

Feb. 9.

The average prices of gas-works products during the week were: Gas-works tar, 18s. 6d. to 22s. 6d. Pitch—East Coast, 43s. to 43s. 6d. f.o.b. West Coast—Manchester, Liverpool, Clyde, 43s. to 43s. 6d. f.o.b.* Toluole, naked, North, 1s. 6¾d. to 1s. 7¼d. Coal-tar crude naphtha, in bulk, North, 9d. to 10d. Solvent naphtha, naked, North, 1s. 2¾d. to 1s. 3d. Heavy naphtha, North, 11d. to 1s. Creosote, in bulk, North, liquid and salty, 3⅞d. to 3¾d.; low gravity, 1⅝d.; Scotland, 3¾d. to 3⅞d. Heavy oils, in bulk, North, 5⅞d. to 5⅞d. Carbolic acid 60's, 1s. 2d. to 1s. 2½d. Naphthalene, £10 to £12. Salts, £3 to £5, bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port, it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *Feb.* 7.

Few orders have been placed during the week, and quotations are somewhat irregular accordingly. No appreciable alteration can be recorded in any product.

Pitch.—Business is dull, and quotations are unchanged at about 42s. 6d. to 45s. per ton f.o.b. Glasgow for export, and about 42s. 6d. per ton *ex* works for home trade.

Refined tar to Ministry of Transport Specification is only in small request at 2½d. to 2⅝d. per gallon f.o.r. makers' works in buyers' packages. Quotations for forward delivery are 2⅝d. to 3d. per gallon.

Creosote.—Values are steady as follows: B.E.S.A. Specification is 2⅝d. to 3d. per gallon; low gravity, 3½d. to 3¾d. per gallon; and neutral oil, 3d. to 3¼d. per gallon—all f.o.r. in bulk.

Cresylic.—There has been an increase in the number of small orders, but the position continues unsatisfactory. Pale, 97/99 p.ct., is 1s. 6d. to 1s. 7d. per gallon; dark, 97/99 p.ct., 1s. 5d. to 1s. 6d. per gallon; and pale, 99/100 p.ct., 1s. 8d. to 1s. 9d. per gallon—all f.o.r. makers' works.

Crude naphtha.—Price remains steady at 4d. to 4½d. per gallon *ex* works.

Solvent naphtha.—Orders are scarce, but prices are unaltered. 90/160 is 1s. 2½d. to 1s. 3½d. per gallon; and 90/190, 1s. to 1s. 0½d. per gallon.

Motor benzole.—Few orders are being placed. The value remains at about 1s. 4d. per gallon f.o.r. in bulk.

Pyridines.—Unchanged with 90/160 nominal at 3s. to 3s. 3d. per gallon.

Benzole Prices.

The following are considered to be the market prices at the present time:

	s. d.		s. d.	
Crude benzole	0 7½	to	0 8¼	per gallon at works
Motor ,,	1 3	,,	1 4	,, ,, ,,
Pure ,,	1 7¼	,,	1 8¼	,, ,, ,,

New Capital Issues.

Bilston Gas Light and Coke Company.—The tenders sent in for the £20,000 5 p.ct. redeemable debenture stock, which were offered on behalf of the Directors of this Company, amounted to £44,350, and ranged from £105 per £100 down to the minimum of par. The stock was allotted at an average price of £101 8s. p.ct.

Chichester Gas Company.—The Directors of the Chichester Gas Company invite applications for an issue by tender of £2500 "C" capital stock (ranking for a maximum dividend of 7 p.ct. per annum) at a minimum price of issue of £102 per £100 stock. The minimum amount which will be allotted is £10, and applications must be received not later than 11 a.m. on March 5.

Contracts Advertised To-Day.

General Stores.

The Tipton Urban District Council invite tenders for the supply of various stores for their Gas Department. [Advert. on p. 346.]

Meters and Repairs.

The Mansfield Corporation invite tenders for the supply and repair of meters. [Advert on p. 346.]

Gas Acts (1920 and 1929) Orders.

SPECIAL ORDERS.

Abergavenny Corporation.

To confer further powers upon the Corporation; to authorize the borrowing of money; and, in particular, to define the existing limits for the supply of gas by the Corporation, and to extend those limits so as to enable them to supply gas within the parishes of Abergavenny Rural, Llanfoist, Llantilio Pertholey, and Llanwenarth Citra, all in the rural district of Abergavenny, and to enable the Corporation to exercise within the added limits all powers, rights, privileges, and authorities which they have within their existing limits of supply.

Wandsworth, Wimbledon, and Epsom District Gas Company.

To change the name of the Company; to provide for the transfer to the Company of the undertaking of the Sutton Gas Company; to make provision in regard to the price to be charged by the Company for gas within the present limits of the Sutton Gas Company; to authorize the Company to raise additional capital; and to make other provisions.

STOCK AND SHARE LIST.

[For Stock Market Report, see earlier pages.]

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf. Yr.	Dividends. Last Hf. Yr.	NAME.	Quotations. Feb. 6.	Rise or Fall on Week.	Transact'ns Lowest and Highest Prices During the Week.
£			% p.a.	% p.a.				
171,978	Stk.	Feb. 5	5	5	Aldershot 5 p.c. max. C. .	73—78*	..	..
522,992	,,	,,	4	4	Do. 4 p.c. Pref. . .	73—78*	+1	..
1,551,868	,,	Oct. 9	7⅞	7⅞	Alliance & Dublin Ord. . .	100—105	..	101—101½
374,000	,,	Jan. 8	4	4	Do. 4 p.c. Deb. . . .	70—75	..	..
522,655	,,	Aug. 28	7	7	Barnet Ord. 7 p.c. . . .	112—117	..	..
300,000	1	Oct. 23	1/4⅛	1/7½	Bombay, Ltd.	15/6 - 17/6	..	15/6
174,500	10	Aug 14	9	9	Bournemouth 5 p.c. . . .	14½—15½	..	..
500,050	10	,,	7	7	Do. B 7 p.c. . .	12½—13	..	..
439,160	10	,,	6	6	Do. Pref. 6 p.c. .	11—11¼	..	..
50,000	Stk.	Dec. 18	3	3	Do. 3 p.c. Deb. .	60—63	..	..
162,025	,,	,,	4	4	Do. 4 p.c. Deb. .	81—84	..	..
357,900	,,	Aug. 28	7½	7½	Brighton & Hove 6 p.c. Con.	112—117	..	115½ 1 6
871,880	,,	,,	6½	6½	Do. 5 p.c. Con.	102—105	..	..
1,287,500	,,	July 24	5	5	Bristol 5 p.c. max.	93—95a	..	..
855,000	,,	Sept. 25	8	7	British Ord.	110—115	..	114½
100,000	,,	Dec. 18	7	7	Do. 7 p.c. Pref. . . .	109—114	..	..
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb. .	74—77	..	..
450 000	,,	,,	5	5	Do. 5 p.c. Red. Deb. .	95—98	..	..
160,000	,,	Jan. 8	5	5	Cambridge 5 p.c. Deb. . .	95—98	..	..
100,000	10	Dec. 4	10	6	Cape Town, Ltd	9½—10¼	+⅜	..
100,000	10	Nov. 6	4½	4½	Do. 4½ p.c. Pref. . .	6¾—7½	..	..
150,000	Stk.	Dec. 18	4½	4½	Do. 4½ p.c. Deb. . .	70—75	..	..
626 860	,,	July 24	6	6	Cardiff Con. Ord.	97—100	+2	..
287 860	,,	Jan. 8	7½	7½	Do. 7½ p.c. Red. Deb. .	97—100	..	..
157,150	,,	Aug. 14	6½	5	Chester 5 p.c. Ord.	86—91b	..	..
98.986	1	Oct. 9	†2/-	†2/-	Colombo, Ltd. Ord. . . .	32/—34/-	..	..
24 500	1	,,	1/4½	1/4½	Do. 7 p.c. Pref. .	1•/—20/-	..	..
609,204	1	Oct. 9	1/9½	1/4½	Colonial Gas Assn. Ld. Ord	16/6—18/6	..	..
296,053	1	,,	1/7½	1/7½	Do. 8 p.c. Pref.	1•/—20/-	..	..
2,078,280	Stk.	July 24	7	6	Commercial Ord.	95—98	..	96¾ - 97
475,000	,,	Dec. 18	3	3	Do. 3 p.c. Deb. . .	57—60	..	..
787,560	,,	Aug. 14	7	7	Croydon sliding scale . .	108—111	+1	109—110½
453,100	,,	,,	5	5	Do. max. div. . . .	84—87	1	..
542 270	,,	Aug. 14	10	7	Derby Con.	115—125e		..
55,000	,,	Dec. 18	4	4	Do. Deb.	65—70e		..
209 000	,,	Aug. 28	5	5	East Hull Ord. 5 p.c. . . .	72—75	..	..
1,002.180	,,	Sept. 25	†7g	†4	European, Ltd.	100—110		101
18,953 033	,,	July 24	5⅜	5⅜	Gas Light & Coke 4 p.c. Ord.	19/6—20/6f	—1/-	19/10½—20/6
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max. . . .	65—67	+1	65—66½
4,294 691	,,	,,	4	4	Do. 4 p.c. Con. Pref. . .	79—82	.	81—82
5,694,095	,,	Dec. 18	3	3	Do. 3 p.c. Con. Deb. . .	61—64	..	63—63½
3,542,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. . .	101—104	+1	102½ - 103
161,480	,,	Sept. 11	10	10	Harrogate Cons. 10 p.c. max.	162—167	..	..
82,500	,,	Aug. 28	7	7	Hastings & St. L. 5 p.c. Conv.	98 -103	..	..
258,740	,,	,,	5½	5½	Do. 3½ p.c. Conv.	82—85	..	..
70,000	10	Oct. 9	¼	10	Hongkong & China, Ltd. .	13—14	..	..
213,200	Stk.	Aug 14	6	6	Hornsey Con. 5½ p.c. . . .	88—91	..	..
2,438,594	,,	Nov. 6	25	15	Imperial Continental Cap. .	355 375	+5	360—373
223,130	,,	Feb. 5	3½	3½	Do. 3½ p.c. Red. Deb.	76—83*	—2	..
235,242	,,	Aug. 14	8½	8½	Lea Bridge 5 p.c. Ord. . .	†27—132	..	128½—130½
2,145,907	,,	Aug. 14	6	6	Liverpool 5 p.c. Ord. . . .	97—98b	..	..
600 000	,,	Sept. 25	7	7	Do. 7 p.c. Red. Pref. .	99—101b	..	..
165 736	,,	Aug. 28	8	9	Maidstone 5 p.c. Cap. . .	123 - 128	..	..
69,480	,,	Dec. 18	3	3	Do. 3 p.c. Deb. . .	54 - 57	..	..
75,000	5	Dec. 4	†10	†10	Malta & Mediterranean . .	5⅝ - 6½	..	..
392,000	—	Oct. 1	5½	5½	Melrep'itan (of Melbourne) 5½ p.c. Red. Deb. . . .	88—91	..	..
675,000	Stk.	Nov. 20	†8	16	Montevideo, Ltd.	95—105	..	..
2,061,315	,,	July 24	5½	5	Newcastle & Gateshead Con.	18/9 - 19/3d/	+·/9	..
682,856	,,	,,	4	4	Do. 4 p.c. Pref. . .	73 - 74d	..	..
691,705	,,	Jan. 8	3½	3½	Do. 3½ p.c. Deb. . .	67½ - 68½d	..	..
277,285	,,	Nov. 5	5	5	Do. 5 p.c. Red. Deb.	98 100d	..	..
169,940	,,	Aug. 28	7½	7½	North Middlesex 6 p.c. Con.	115—120	..	..
396,160	,,	Feb. 5	5	5	Northampton 5 p.c. max. .	74—79*	—2	76½
300,000	,,	Nov. 20	7	9	Oriental, Ltd.	104—109	..	..
60,000	5	18 My., '15	—	—	Ottoman	0—¼	..	..
205,162	Stk.	Dec. 18	8	8	Plym'th & Stonehouse 5 p.c.	107 112	..	..
424,416	,,	Aug. 28	8	8	Portsm'th Con. Stk. 4 p.c. Std	115—120	..	..
241,446	,,	,,	5	5	Do. 5 p.c. max. . .	80—83	..	..
686 312	Stk.	Jan. 22	4	4	Primitiva 4 p.c. Rd. Db. 1911	82—85*		..
389 813	,,	Dec. 18	4	4	Do. 4 p.c. Cons. Deb.	83—86	..	..
150,000	10	Sept. 25	6	6	San Paulo 6 p.c. Pref. . .	8½ - 8¾		..
1,736,968	Stk.	Aug. 28	6¼	6¼	Sheffield Cons.	105—107e	..	..
95.000	,,	Jan. 8	4	4	Do. 4 p.c. Deb.	77—79e	..	..
90 000	10	June 5	†4	†5	South African	4—6	..	..
6,709,895	Stk.	Feb. 5	5	7½	South Met. Ord.	103—106*	—3	104—108
1,185,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf.	111—114*	—2	..
1,895,445	,,	Jan. 8	3	3	Do. 3 p.c. Deb. . .	60—63	..	62½
734,000	,,	Sept 11	6¼	6¼	Do. 6¼ p.c. Red. Db.	99—102	..	100
91.500	,,	Aug. 14	8½	8½	South Shields Con. . . .	110—111d	+1	..
1,543,795	,,	July 24	6½	6½	South Suburban Ord. 5 p.c.	102—105	..	105
658,837	,,	Dec. 18	5	5	Do. 5 p.c. Deb.	99—102	..	..
647 740	,,	Aug. 28	5	5	Southampton Ord. 5 p.c. max.	75—78	..	..
121 275	,,	Dec. 18	4	4	Do. 4 p.c. Deb.	75—78	..	..
179,014	,,	July 24	8	8	Sutton Ord.	120—130	..	..
94,500	,,	Jan. 8	5	5	Do. 5 p.c. Deb. . . .	96—99	..	..
250,000	,,	Aug. 28	7	7	Swansea 7 p.c. Red. Pref. .	98—101	..	..
200,000	,,	Dec. 18	6½	6½	Do. 6½ p.c. Red. Deb. .	100 -103	..	..
1,076,490	,,	July 24	6⅝	6⅝	Tottenham District Ord. .	103 107	..	105½—106½
150,000	,,	,,	5½	5½	Do. 5½ p.c. Pref. . .	103—106	+1	10.½—105⅝
199,005	,,	Dec. 18	4	4	Do. 4 p.c. Deb. . .	77—80	..	..
85,701	,,	Sept. 25	6	6	Tuscan, Ltd., 6 p.c. Red. Db.	74 -79	..	..
310,694	,,	Aug. 28	7	7	Uxbridge, Maidenhead, & Wycombe 5 p.c.	97 -102	..	..
88,330	,,	,,	5	5	Do. 5 p.c. pref. . .	90 -95	..	..
1,180,970	,,	July 10	—	7	Wandsworth, Wimbledon, and Epsom Cons. . .	113—115	..	113½
200,000	,,	,,	5	5	Do. 5 p.c. Pref. . . .	95—98	..	96—97½
488,344	,,	Dec. 18	5	5	Do. 5 p.c. Deb. . . .	100—103	..	102⅝

Quotations at :—*a.*—Bristol. *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. *f.*—The quotation is per £1 of stock. *g.*—Paid on £10 Shares. * Ex. div. † Paid free of income-tax. ‡ For year. § Div. = 10 p.ct. p.a. less tax and less tax on interim dividend.

GENERAL
IMMERSION
Indirect Water Heater

Unique and Different

Adoption means Progress

THE SECRET OF A CHEAP & ABUNDANT SUPPLY of HOT WATER

LOW INITIAL COST
LOW INSTALLATION COST
MINIMUM GAS CONSUMPTION
NEGLIGIBLE MAINTENANCE COSTS
HARD AND SOFT WATER TROUBLES DISAPPEAR
NO DISCOLORATION OF WATER
NO CORROSION OF INTERNAL FLUES
NO CONDENSATION
NO DEPOSITS IN FLUES OR BOILER
WORKS INDEPENDENTLY OR IN CONJUNCTION WITH THE RANGE BOILER

GENERAL GAS APPLIANCES LIMITED
Guide Bridge Manchester

INDEX TO "JOURNAL" ADVERTISERS.

	PAGE
Aerograph Co., Ltd.	—
Alder & Mackay, Ltd.	Wrapper I., 301
Aldridge & Ranken, Ltd.	—
Allan, Thomas, & Sons, Ltd.	346
Anglo-American Oil Company, Ltd.	—
Arden Hill & Co.	—
Asbestos Cement Building Products, Ltd.	—
Ashmore, Benson, Pease, & Co., Ltd.	Wrapper I.
Bagnall, John, & Sons, Ltd.	—
Bagshawe & Co., Ltd.	—
Bale & Church, Ltd.	345
Barclay, Andrew, Sons, & Co., Ltd.	351
Barrowfield Ironworks, Ltd.	—
Bell's Poilite & Everite Co., Ltd.	—
Berk, F. W., & Co., Ltd.	—
Blakeley (Firth), Sons, & Co., Ltd.	346
Braddock, J. & J.	Centre X., 345
Bradley & Burch, Ltd.	350
Bray, George, & Co., Ltd.	300
British Aluminium Co., Ltd.	—
British Fibrocement Works, Ltd.	—
British Furnaces, Ltd.	—
British Gas Purifying Materials Co.	345
British Industries Fair	—
British Thomson-Houston Co., Ltd.	—
Broadbent, Thos., & Son, Ltd.	—
Broadhead Constructions, Ltd.	—
Bugden, T., & Co.	—
Cambridge Instrument Co., Ltd.	—
Cannon Iron Foundries, Ltd.	305
Carron Company	Centre XI.
Cellactite & British Uralite, Ltd.	303
Chapman (Spencer) & Messel, Ltd.	345
Chemical Engineering and Wilton's Patent Furnace Co., Ltd.	—
Clapham Bros., Ltd.	—
Clarks Stove Co., Ltd.	—
Clayton, Son, & Co., Ltd.	355
Cloake, A. G.	Centre VII.
Coleman Foundry Equipment Co.	—
Colthrop Board & Paper Mills, Ltd.	—
Constructors, Ltd.	—
Cort, Robert, & Son, Ltd.	304
Cowan, W. & B.	Wrapper III.
Crepin & Doumin, Ltd.	—
Crossley Bros. (Bispham)	—
Cutler, Samuel, & Sons, Ltd.	Centre X.
Dampney, J., & Co., Ltd.	—
Danks, H. & T. (Netherton), Ltd.	345
Davis Gas Stove Co., Ltd.	—
Davison & Partner, Ltd.	—
Dempster, R. & J., Ltd.	Wrapper I.
Dempster, R., & Sons., Ltd.	Centre II., 346
Donkin Co., Ltd. (The Bryan)	Wrapper II.
Drakes, Ltd.	—
Drayton Regulator and Instrument Co., Ltd.	—
Dry Gasholders, Ltd.	—
Duckham, Alexander, & Co., Ltd.	—
Duxbury, Thomas, & Co.	Wrapper I., 345
Economic Gas Boiler Co., Ltd.	—
Economical Gas Apparatus Construction Company, Ltd.	—
Eden Fisher & Co., Ltd.	—
Electrolux, Ltd.	—
Evans, Joseph, & Son (Wolverhampton), Ltd.	352
Expanded Metal Company, Ltd.	—
Falk, Stadelmann, & Co., Ltd.	306
Fletcher, Russell, & Co., Ltd.	—
Foster & Pullen, Ltd.	—
Foster Bros., Ltd.	—
Fraser & Chalmers Engineering Works	—
Gas Chambers and Coke Ovens, Ltd.	—
Gas Meter Co., Ltd.	Wrapper IV., 306
Gas Purification and Chemical Co.	Wrapper I., 345
General Gas Appliances, Ltd.	309, 343
General Refractories, Ltd.	—
Gent & Co., Ltd.	—
Gibbons Bros., Ltd.	—
Gibbons (Dudley), Ltd.	—
Gledhill-Brook Time Recorders	—
Glenboig Union Fireclay Co., Ltd.	349
Glover, George, & Co., Ltd.	297
Glover, Thos., & Co., Ltd.	310
Goodall, Clayton, & Co., Ltd.	Centre VII.
Grant, David, & Co.	354
Green & Boulding, Ltd.	346
Griffiths Bros. & Co. (London), Ltd.	Wrapper I.
Hall, John, & Co., Stourbridge, Ltd.	—
Hardtmuth, L. & C.	—
Harris & Pearson	348
Head, Wrightson, & Co., Ltd.	—
Holmes, W. C., & Co., Ltd.	Wrapper I., 347
Holst, K., & Co.	—
Horseley Bridge and Engineering Company, Ltd.	—
Horstmann Gear Company, Ltd	349
Hortonspheres	—
Humphreys & Glasgow, Ltd.	308
Hurry Water Heater Co.	—
Hutchinson Bros., Ltd.	—
Incandescent Heat Co., Ltd	351
Institute of Chemistry	—
Jenkins, Robert, & Co., Ltd.	—
Jenkins, W. J., & Co., Ltd.	—
Jewitt, W. T. & H.	—
Kaye, Joseph, & Sons, Ltd.	—
Keith, James, & Blackman Company, Ltd.	356
Kempton, C. H., & Co., Ltd.	302
King, Walter, Ltd.	353
King's Patent Agency	345
Kinnell, Chas. P., & Co., Ltd.	352
Kirkham, Hulett, & Chandler, Ltd.	307
Kleenoff Co.	345
Koppers Coke Oven Co., Ltd.	—
Lacy-Hulbert & Co., Ltd.	—
Laidlaw, R., & Son (Edin.), Ltd.	354
Le Bas Tube Co., Ltd.	348
Lead Wool Company, Ltd.	—
Lighting Trades Ltd.	303
London Electric Firm, The	—
Macpherson, Donald, & Co., Ltd.	—
Main, R. & A., Ltd.	Centre IX.
Manchester Oxide Co., Ltd.	—
McKelvie, James, & Co.	Wrapper I.
Metropolitan Vickers Electrical Co., Ltd.	302
Mewburn, Ellis, & Co.	345
Mitchell, H., & Co.	—
New Conveyor Co., Ltd.	353
Newton Chambers & Co., Ltd.	Centre VI.
Orme, George, & Co.	—
Oughtibridge Silica Firebrick Co.	301
Parker, Winder, & Achurch, Ltd.	—
Parkinson Stove Co., Ltd.	Centre III.
Parkinson, W., & Co.	300, 310
Patent Retorts, Ltd.	348
Pearn, Frank, & Co., Ltd	—
Pearson, E. J. & J., Ltd.	—
Peckett & Sons, Ltd.	348
Peebles & Co., Ltd.	—
Penney & Porter, Ltd.	—
Perfecta Meters, Ltd.	—
Phillips, J. W. & C. J., Ltd.	346
Piggott, Thos., & Co., Ltd.	298
Pitman, Sir Isaac, & Sons, Ltd.	300
Pneumatic Conveyance and Extraction (1929), Ltd.	—
Pocock, Herbert	—
Potterton, T. (Heating Engineers), Ltd.	—
Premier Gas Engine Co., Ltd.	—
Progas Co., Ltd.	—
Pulsometer Engineering Company	Wrapper IV.
Purimachos Ltd.	—
Quasi-Arc Co., Ltd.	—
Radiation Ltd.	Centre IV., V., 299
Raschig, Dr. F., G.m.b.H.	—
Reavell & Co., Ltd.	355
Richmonds Gas Stove Co., Ltd.	—
Rigby, John, & Sons, Ltd.	—
Riley, A. J., & Sons, Ltd.	—
Riley, John, & Sons, Ltd.	—
Robinson, J. H., & Co. (L'pool), Ltd.	—
Ross, Chas., Ltd.	345
Rotary Meter Company, Ltd.	—
Rotherham and District Collieries Association, Ltd.	Wrapper IV.
Ruscoe, John, & Co., Ltd.	—
Sawer & Purves	Centre VIII.
Scottish Tube Co., Ltd.	350
Sentinel Waggon Works, Ltd.	—
Sheepbridge Coal and Iron Co., Ltd.	—
Siebe, Gorman, & Co., Ltd.	350
Simon-Carves, Ltd.	—
Smith Meters, Ltd.	—
Solent Engineering Co., Ltd	Wrapper IV.
South Metropolitan Gas Company	Wrapper II.
Spencer-Bonecourt, Ltd.	341
Spencer Chapman & Messel, Ltd.	345
Stanton Ironworks Co., Ltd.	Centre VIII.
Staveley Coal and Iron Co., Ltd.	—
Stein, J. G., & Co., Ltd.	Wrapper I.
Stewarts and Lloyds, Ltd.	352
Stothert & Pitt, Ltd.	—
Strachan & Henshaw, Ltd.	297
Stringer Bros.	—
Sugg, Wm., & Co., Ltd.	—
Super-Centrifugal Engineers, Ltd.	—
Taylor, Joseph (Saturators), Ltd.	—
Thomas & Bishop, Ltd.	—
Thompson, J. (Wolverhampton), Ltd	—
Tilghman's Patent Sand Blast Co.	—
Tilley Bros., Ltd.	—
Torbay Paint Company, Ltd.	Wrapper I.
Trier Bros., Ltd.	—
Trotter, Haines, and Corbett, Ltd.	346
Tully Sons & Co., Ltd.	354
Turbine Furnace Co., Ltd.	—
Turner Brothers Asbestos Co., Ltd.	—
Turner, F. (Art Metal), Ltd.	—
Vertical Gas Retort Synd., Ltd.	353
Vickery, J. H., & Co., Ltd.	—
Wailes Dove Bitumastic, Ltd.	—
Walker, C. & W., Ltd.	Centre VII.
Walker, Crosweller, & Co., Ltd.	348
Waller, Geo., & Son, Ltd.	298
Walworth, Ltd.	—
Waterless Gasholder Co., Ltd.	—
Weir, G. & J., Ltd.	—
Wellington Tube Works, Ltd.	—
Welsbach Light Company, Ltd.	303
West's Gas Improvement Co.	Centre XII.
Westwood & Wrights, Ltd.	—
Whessoe Foundry and Eng. Co., Ltd.	—
Wholesale Fittings Co., Ltd.	—
Willey & Co., Ltd.	—
Williamson Cliff, Ltd.	—
Wilson (George) Gas Meters, Ltd.	345
Wilsons & Mathiesons, Ltd.	—
Winn, Paul, & Co., Ltd.	—
Woodall-Duckham Co., Ltd.	Centre I.
Woolley, James, Sons & Co., Ltd.	—
Wright, Alex., & Co., Ltd.	Wrapper I.
Wright, John, & Co.	299

Appointments Vacant and Wanted	345
Company Notices	346
Contracts Open	346
Educational	—
Gas Undertaking for Sale	—
Patent Exploitation	—
Plant, &c., for Sale and Wanted	345
Stock Issues	346

CONTENTS

EDITORIAL NOTES.

A GLANCE AT THE CONTENTS . . . 401
Buy British . . . 402
Knowledge is Power . . . 402
Mr. Morrison Replies . . . 403
Tied Houses . . . 404
Incomplete Combustion . . . 404
More Electricity—And Gas—Further Reflection for Mr. Morrison—Decentralizing the Selling Side . . . 404

Forthcoming Engagements . . . 404
Personal—
A Family Record . . . 405
Obituary . . . 405

CORRESPONDENCE.

Municipal Tyranny . . . 405
Review of Basic Price Legislation . . . 405

THE NEWS OF THE WEEK.

Gas and Electricity in L.C.C. Dwellings . . 406
Sir Francis Goodenough on "Ministerial Propaganda" . . . 406
The Minister of Transport's Reply to His Critics . . . 406
Boosting the Grid . . . 407
Gas in Council Houses . . . 407
The Embargo on Gas—A Worker's Protest . 407
Unfair Discriminating Treatment . . . 407
Removing Restrictions on Gas . . . 407
Gas and Electricity . . . 407
Tenants Win Fight Against Council House Ban . . . 408
"Coming of Age" of the Illuminating Engineering Society . . . 408
Lady Goodenough Distributes Prizes . . . 408
Large Lancashire Coke Oven Order . . . 408
Mr. A. W. Smith Speaks on the Birmingham Gas Department . . . 408
Gas-Tight Stanton-Wilson Flexible Joint . 409
Gas Equipment for South Shields Council Houses . . . 409
The Industry in Buenos Aires . . . 409
The Rationalization Problem . . . 409
"Forging Ahead" . . . 409
Municipal Tyranny . . . 409
Political Interference . . . 410
British Gas Light Company's Cricket Club Entertainment . . . 410

THE NEWS OF THE WEEK—(*continued*).

Thirty-Eight Years' Progress . . . 410
Gas and Dirty Ceilings . . . 410
Notes from Scotland . . . 410
European Gas Company, Ltd. . . . 410

Glimpses into the Past—From the files of the "JOURNAL" . . . 411
BRITISH INDUSTRIES FAIR—
Plan of the Stands, with Names and Positions of Exhibitors . . . 412
Gas Industries Section at the Fair . . . 413
Miscellaneous Exhibits at the Fair . . . 433
To Whom Credit is Due for the Gas Section . . . 436
Notes from the Fair . . . 436
Address to the Junior Associations . . . 437
Gas Service—Discussed from the Viewpoint of the Gas Salesman . . . 438
In Continental Countries—Abstract Translations from the Technical Press of France and Germany . . . 439
National Gas Council—Meeting of Central Executive Board . . . 439

THE "JOURNAL" TECHNICAL RECORD.

Manchester and District Junior Gas Association—
Visit to the Chemical and Metallurgical Corporation, Ltd., Runcorn . . . 440
The World Position of Nitrogen. By G. C. Riley, M.A., B.Sc., and H. G. Bott, Ph.D., A.I.C. . . . 440
Midland Junior Gas Association—
Erection of a New Spiral Gasholder in an Existing Tank. By H. S. Adams, Assoc.M.Inst.Gas E. . . . 443
Scottish Junior Gas Association (Eastern District)—
Visit to the Works of Milne Meters, Ltd. . 445
Gas-Works Statistics. By Edward Alexander . . . 445
Wales and Monmouthshire Junior Gas Association—
Domestic Hot Water Supply. By W. G. Biggins . . . 446
Midland Junior Gas Association—
Visit to the Works of Messrs. Edwin Danks & Co., Ltd. . . . 448

PARLIAMENTARY INTELLIGENCE.

House of Lords—
Private Bills . . . 448
Gas Fund . . . 448
House of Commons—
Shortage of Shillings for Gas Meters . . 448
Hire Purchase Bill . . . 448

Commercial Gas Company—Annual Ordinary Meeting . . . 449
Another Record Year at Portsmouth . . . 450
South Suburban Gas Company—Annual General Meeting . . . 451
Croydon Gas Company—Annual General Meeting . . . 453
Cardiff Gas Light and Coke Company . . 454
York Gas Company's Progress . . . 455
Record Gas Sales in Bristol . . . 455
Gas Company Results in 1930 . . . 455
Overseas Opportunities . . . 455

REGISTER OF PATENTS.

Producer, &c., Feeding Doors—The Gas Light and Coke Company and Thorman, J. S. . 456
Open Flame Gas Radiators—Wortley, G. W., and Main, R. & A., Ltd. . . . 456
Waterless Gasholders—Maschinenfabrik Augsburg-Nurnberg A.G. . . . 456
Methanation of Carbon Monoxide—Humphreys & Glasgow, Ltd. . . . 456

LEGAL INTELLIGENCE.

Lapse of a Trusted Official . . . 457

Trade Notes . . . 457

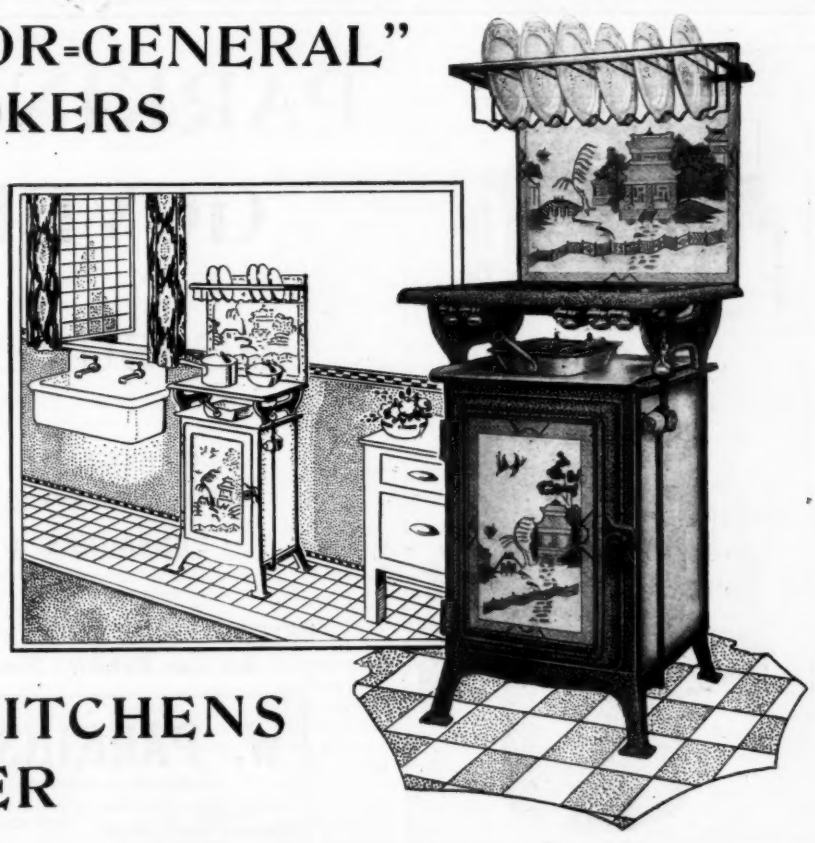
GAS MARKETS AND MANUFACTURES.

Stock Market Report . . . 458
Contracts Advertised To-Day . . . 458
Current Sales of Gas Products . . . 458
New Capital Issues . . . 458

Stock and Share List . . . 459

"JOURNAL" Telephone: Central 2236-7 (2 lines) | For Advertisers' Index—see p. 465

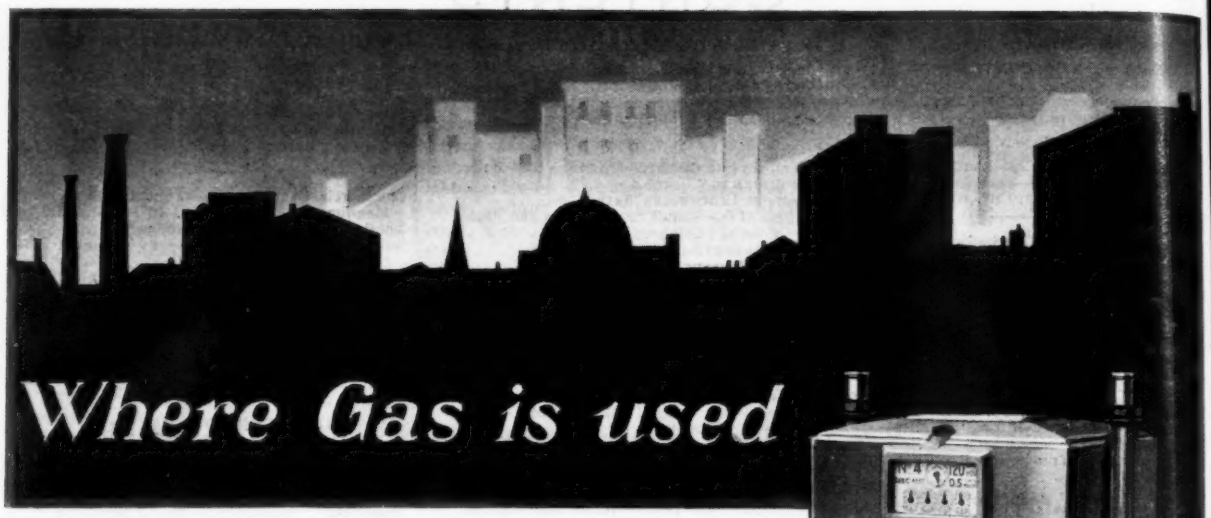
"GOVERNOR-GENERAL" GAS COOKERS



WILLOW PATTERN EXTERIOR ENAMELS

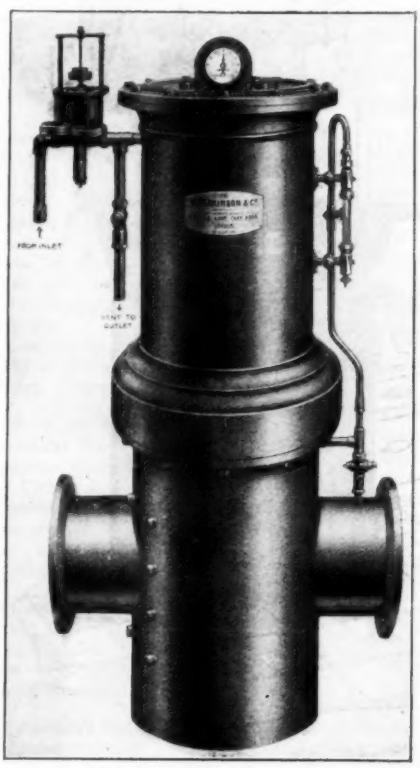
MAKE KITCHENS BRIGHTER

General Gas Appliances Ltd., Guide Bridge, Manchester



BRITISH INDUSTRIES FAIR, BIRMINGHAM
FEB. 16—27. *Stand No. 11 E.*

THOMAS GLOVER & CO. LTD.
Original Dry Meter Makers : Established In 1844.
Gothic Works : EDMONTON : LONDON : N18 : & Branches.



PARKINSON'S
GOVERNORS

PRESSURE-LOADED

COMPLETELY ENCLOSED
NO HEAVY WEIGHTS TO LIFT
PRESSURES UNLIMITED

BRITISH INDUSTRIES FAIR, BIRMINGHAM
: : See our Exhibit—Stand 12 F 1 & 2 : :

W. PARKINSON & CO.,
INCORPORATED IN PARKINSON & COWAN (GAS METERS), LTD.

COTTAGE LANE, CITY ROAD, LONDON, E.C.1.	BELL BARN ROAD, BIRMINGHAM.	RAPHAEL STREET, CROMAC STREET, BELFAST.
Telegrams: "INDEX, 'PHONE, LONDON."	"GASMETERS, B'HAM."	"PREPAYMENT, BELFAST."
'Phone Nos.: 4270 Clerkenwell	2245 Midland, B'ham.	3374 Belfast.